

TI 4100.25

**AVN
FLIGHT INSPECTION
MAINTENANCE
DIVISION**

**MAINTENANCE RELIABILITY
PROGRAM MANUAL**

AVIATION SYSTEM STANDARDS

**Mike Monroney Aeronautical Center
6500 South MacArthur Blvd.
Oklahoma City, Oklahoma 73125**

CHANGE**U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION****TI 4100.25
CHANGE 08**

SUBJ: Aviation System Standards (AVN) Aircraft Maintenance and Engineering Division
(AMED) Maintenance Reliability Program Manual

Change 08 revises title and prefix of Form VN 4040-11 and corrects change and date error on two pages.

The List of Effective Pages is updated.

The Table of Contents is updated.

Chapter V, Section 1, page V.1.4 corrected date and change number in header.

Chapter VI, Section 1, page VI.1.1 corrected date in header.

Chapter VII, Section 3, paragraph A.(1) corrected prefix for VN Form 4040-11.

Chapter VIII, Section 2 is revised to reflect proper name of VN Form 4040-11, AVN Safety Significant Event.

PAGE CONTROL CHART

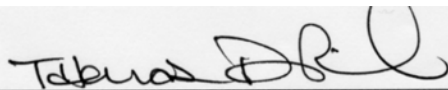
Remove from			Insert In		
Chapter/ Section	Pages	Dated	Chapter/ Section	Pages	Dated
LEP	1-3	08/22/03	LEP	1-3	06/17/04
0.0	0.0.1-0.0.2	08/22/03	0.0	0.0.1-0.0.2	06/17/04
V.1	V.1.4	03/01/02	V.1	V.1.4	08/22/03
VI.1	VI.1.1	DATE	VI.1	VI.1.1	08/22/03

06/17/04

TI 4100.25
CHANGE: 08

Remove from			Insert In		
Chapter/ Section	Pages	Dated	Chapter/ Section	Pages	Dated
VII.3	VII.3.1	08/22/03	VII.3	VII.3.1	06/17/04
VIII.2	VIII.2.1	08/22/03	VIII.2	VIII.2.1	06/17/04

After inserting this Change, enter your initials and the date on the RECORD OF CHANGES PAGE LOCATED AT THE FRONT OF THE MANUAL. File this change notice behind the manual title page.



Thomas D. Pickle, Director of Maintenance
Aircraft Maintenance and Engineering Division, AVN-300

Date: _____

6/25/04

03/01/02

TI 4100.25
CHANGE: 06

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RECORD OF CHANGES

DIRECTIVE NO.

TI 4100.25

Keep your directives current. After filing revised pages and removing obsolete pages, initial and date the block following the change number. Request any missing changes from your central distribution point.											
CHG. NO.	INITIAL	DATE	CHG. NO.	INITIAL	DATE	CHG. NO.	INITIAL	DATE	CHG. NO.	INITIAL	DATE
1			31			61			91		
2			32			62			92		
3			33			63			93		
4			34			64			94		
5			35			65			95		
6			36			66			96		
7			37			67			97		
8			38			68			98		
9			39			69			99		
10			40			70			100		
11			41			71			101		
12			42			72			102		
13			43			73			103		
14			44			74			104		
15			45			75			105		
16			46			76			106		
17			47			77			107		
18			48			78			108		
19			49			79			109		
20			50			80			110		
21			51			81			111		
22			52			82			112		
23			53			83			113		
24			54			84			114		
25			55			85			115		
26			56			86			116		
27			57			87			117		
28			58			88			118		
29			59			89			119		
30			60			90			120		

AVIATION SYSTEM STANDARDS

AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION

MAINTENANCE RELIABILITY PROGRAM MANUAL

LIST OF EFFECTIVE PAGES

The List of Effective Pages contains Paragraph A, change numbers to the TI 4100.25 and their date of issuance and Paragraph B is a list of manual pages and their current change number. Individual page change numbers can be cross-referenced to the list in Paragraph A to determine the date of change.

File this List of Effective Pages behind the Record of Changes page in the front of this manual.

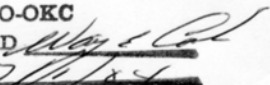
A. <u>Manual Change Number</u>	<u>Date of Issuance</u>
Change 06 (consolidated reprint)	03/01/02
Change 07 (consolidated reprint)	08/22/03
*Change 08	06/17/04

B. Total number of pages in this Manual is 96 consisting of the following:

* Indicates material revised, added or deleted by the current change.

NAME	PAGE NO.	CHANGE NO.
Record of Changes	Unnumbered	06-03/01/02
* List of Effective Pages	1	08-06/17/04
*	2	08-06/17/04
*	3	08-06/17/04
	4	07-08/22/03
Introduction	i	07-08/22/03
* Master Table of Contents	0.0.1	08-06/17/04
*	0.0.2	08-06/17/04
Terms, Abbreviations and Acronyms	0.1.1	07-08/22/03
	0.1.2	07-08/22/03
	0.1.3	07-08/22/03
	0.1.4	07-08/22/03
	0.1.5	07-08/22/03
I.1	I.1.1	07-08/22/03
I.2	I.2.1	07-08/22/03
	I.2.2	07-08/22/03
I.3	I.3.1	07-08/22/03
I.4	I.4.1	07-08/22/03
	I.4.2	07-08/22/03
	I.4.3	07-08/22/03
	I.4.4	07-08/22/03
I.5	I.5.1	07-08/22/03
I.6	I.6.1	07-08/22/03
	I.6.2	07-08/22/03

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AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

	NAME	PAGE NO.	CHANGE NO.
*	II.1	II.1.1	07-08/22/03
*	II.2	II.2.1	07-08/22/03
*	II.3	II.3.1	07-08/22/03
*		II.3.2	07-08/22/03
*			
*	II.4	II.4.1	07-08/22/03
*	III.1	III.1.1	07-08/22/03
*	III.2	III.2.1	07-08/22/03
*	III.3	III.3.1	07-08/22/03
		III.3.2	07-08/22/03
*		III.3.3	07-08/22/03
*		III.3.4	07-08/22/03
*			
*	IV.1	IV.1.1	07-08/22/03
		IV.1.2	07-08/22/03
*		IV.1.3	07-08/22/03
		IV.1.4	07-08/22/03
		IV.1.5	07-08/22/03
*		IV.1.6	07-08/22/03
*		IV.1.7	07-08/22/03
*		IV.1.8	07-08/22/03
	V.1	V.1.1	07-08/22/03
		V.1.2	07-08/22/03
*		V.1.3	07-08/22/03
*		V.1.4	07-08/22/03
	VI.1	VI.1.1	07-08/22/03
	VI.2	VI.2.1	07-08/22/03
*		VI.2.2	07-08/22/03
*	VI.3	VI.3.1	07-08/22/03

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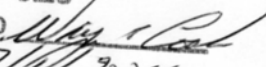
AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

NAME	PAGE NO.	CHANGE NO.
VI.4	VI.4.1	07-08/22/03
	VI.4.2	07-08/22/03
VI.5	VI.5.1	07-08/22/03
VI.6	VI.6.1	07-08/22/03
	VI.6.2	07-08/22/03
VI.7	VI.7.1	07-08/22/03
	VI.7.2	07-08/22/03
	VI.7.3	07-08/22/03
VI.8	VI.8.1	07-08/22/03
	VI.8.2	07-08/22/03
VI.9	VI.9.1	07-08/22/03
	VI.9.2	07-08/22/03
	VI.9.3	07-08/22/03
VII.1	VII.1.1	07-08/22/03
	VII.1.2	07-08/22/03
VII.2	VII.2.1	07-08/22/03
* VII.3	VII.3.1	08-06/17/04
	VII.3.2	07-08/22/03
VII.4	VII.4.1	07-08/22/03
VII.5	VII.5.1	07-08/22/03
VII.6	VII.6.1	07-08/22/03
VIII.1	VIII.1.1	07-08/22/03
* VIII.2	VIII.2.1	08-06/17/04
	VIII.2.2	07-08/22/03
	VIII.2.3	07-08/22/03
	VIII.2.4	07-08/22/03
	VIII.2.5	07-08/22/03
	VIII.2.6	07-08/22/03
	VIII.2.7	07-08/22/03
	VIII.2.8	07-08/22/03
	VIII.2.9	07-08/22/03
	VIII.2.10	07-08/22/03
	VIII.2.11	07-08/22/03
	VIII.2.12	07-08/22/03
	VIII.2.13	07-08/22/03
	VIII.2.14	07-08/22/03
	VIII.2.15	07-08/22/03

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TI 4100.25
CHANGE: 07

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

	NAME	PAGE NO.	CHANGE NO.
*		VIII.2.16	07-08/22/03
		VIII.2.17	07-08/22/03
		VIII.2.18	07-08/22/03
		VIII.2.19	07-08/22/03
		VIII.2.20	07-08/22/03
		VIII.2.21	07-08/22/03
*		VIII.2.22	07-08/22/03
*		VIII.2.23	07-08/22/03
*		VIII.2.24	07-08/22/03

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AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

INTRODUCTION

This Maintenance Reliability Program Manual has been prepared in accordance with Federal Aviation Administration (FAA) approved guidelines provided in Advisory Circular 120-17A, Maintenance Control By Reliability Methods and FAA Order 8300.10, Aviation Safety Inspectors Handbook.

The manual defines and describes the organizational structure, administrative roles and reliability control used in defining, measuring and controlling maintenance effectiveness and operational reliability.

The goal of Aviation System Standards (AVN) is to foster and achieve the highest degree of Federal Aviation Regulation (FAR) compliance in all facets of AVN aircraft maintenance activities. In order to realize this goal, this manual must be strictly complied with.

**AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL**

MASTER TABLE OF CONTENTS

CHAPTER TITLE	CHAPTER/ SECTION/ PAGE	CHANGE/ DATE
RECORD OF CHANGES	Unnumbered	06-03/01/02
*LIST OF EFFECTIVE PAGES	1 2 3 4	08-06/17/04 07-08/22/03 08-06/17/04 07-08/22/03
INTRODUCTION	i	07-08/22/03
*MASTER TABLE OF CONTENTS	0.0.1-0.0.2	08-06/17/04
TERMS, ABBREVIATIONS AND ACRONYMS	0.1.1-0.1.5	07-08/22/03
CHAPTER I. GENERAL		
I.1 General	I.1.1	07-08/22/03
I.2 Program Description	I.2.1-I.2.2	07-08/22/03
I.3 Manual Structure	I.3.1	07-08/22/03
I.4 Revision System	I.4.1-I.4.4	07-08/22/03
I.5 Distribution and Access	I.5.1	07-08/22/03
I.6 Program Application	I.6.1-I.6.2	07-08/22/03
CHAPTER II. ORGANIZATIONAL STRUCTURE		
II.1 Aviation System Standards (AVN) Maintenance Review Board (MRB)	II.1.1	07-08/22/03
II.2 Maintenance Review Board Organizational Chart	II.2.1	07-08/22/03
II.3 Maintenance Review Board (MRB) Responsibilities	II.3.1-II.3.2	07-08/22/03
II.4 AVN Maintenance Review Board Meetings	II.4.1	07-08/22/03
CHAPTER III. DATA COLLECTION PROCEDURE		
III.1 Data Collection Application	III.1.1	07-08/22/03
III.2 Data Collection Flow Diagram	III.2.1	07-08/22/03
III.3 Reliability Source Data	III.3.1-III.3.4	07-08/22/03
CHAPTER IV. DATA ANALYSIS PROCEDURES		
IV.1 Reliability Performance Parameters	IV.1.1-IV.1.8	07-08/22/03
CHAPTER V. CORRECTIVE ACTION PROCEDURE		
V.1 Corrective Action Application	V.1.1-V.1.4	07-08/22/03

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER TITLE	CHAPTER/ SECTION/ PAGE	CHANGE/ DATE
CHAPTER VI. INTERVAL ADJUSTMENT AND PROCESS CHANGES		
VI.1 Initial Maintenance Program	VI.1.1	07-08/22/03
VI.2 Maintenance Program Adjustments	VI.2.1-VI.2.2	07-08/22/03
VI.3 Component Overhaul Limitation Adjustments	VI.3.1	07-08/22/03
VI.4 Short-Term Escalation	VI.4.1-VI.4.2	07-08/22/03
VI.5 Maintenance Time Limitations	VI.5.1	07-08/22/03
VI.6 Primary Maintenance Processes	VI.6.1-VI.6.2	07-08/22/03
VI.7 Primary Maintenance Process Changes	VI.7.1-VI.7.3	07-08/22/03
VI.8 MSG-2 Decision Diagram	VI.8.1-VI.8.2	07-08/22/03
VI.9 MSG-3 Maintenance Task Revisions	VI.9.1-VI.9.3	07-08/22/03
CHAPTER VII. AVIATION MAINTENANCE HUMAN FACTORS PROGRAM		
VII.1 Purpose and Description	VII.1.1-VII.1.2	07-08/22/03
VII.2 Responsibilities	VII.2.1	07-08/22/03
*VII.3 Error Investigation	VII.3.1-VII.3.2	08-06/17/04
VII.4 Validation of Investigative Results	VII.4.1	07-08/22/03
VII.5 Implementation of Prevention/Intervention Strategies	VII.5.1	07-08/22/03
VII.6 Program Measurement	VII.6.1	07-08/22/03
CHAPTER VIII. DATA DISPLAY AND REPORTS		
VIII.1 Fleet Reliability Report	VIII.1.1	07-08/22/03
*VIII.2 Reliability Affiliated Forms, Reports and Documents	VIII.2.1	08-06/17/04
	VIII.2.2-VIII.2.24	07-08/22/03

**AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL**

TERMS, ABBREVIATIONS AND ACRONYMS

This is a comprehensive listing of special terms, abbreviations, and acronyms that are used throughout this Maintenance Reliability Program Manual. As applicable, each significant term and abbreviation is accompanied by a description or definition as used in this document.

AVN	Aviation System Standards
Actuarial Analysis	Statistical analysis of failure data to determine the age-reliability characteristics of an item.
AD	Airworthiness Directive applies to aircraft, engines propellers or appliances. Airworthiness Directives (AD's) are issued under the provisions of FAR Part 39. These directives are sent to the operator informing of an unsafe condition in a product or that a condition is likely to exist or develop in other products of the same type design. The AD will provide instructions, conditions and limitations under which the product may continue to be operated.
Alert Level	Specific performance level or rate signaling a potential problem or adverse trend, System and Component Type Alert Condition.
APU	Auxiliary Power Unit
ATA	Airline Transport Association of America
AVN MRB	Aviation System Standards Maintenance Review Board
Basic Engine	The manufacturer's product with minimum components required for test cell operation.
Bench Check	A functional check of an item in the shop to tolerances specified in the operator's shop manual to determine whether or not the item may be returned to service or whether it requires adjustment, repair or overhaul.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CAMP	Continuous Airworthiness Maintenance Program
*Cancellation	A cancellation for the purposes of this program is defined as anytime a scheduled flight is not operated by AVN aircraft for known or suspected aircraft mechanical problems. Cancellations occur under variable conditions with a time variance of two to three hours.
CASP	The Continuing Analysis and Surveillance Program (CASP) provides full analysis and surveillance capability for the FAA continuous airworthiness maintenance program. The program applies to all FAA maintenance organizations and the assigned aircraft appliances, systems, and equipment, including avionics and test equipment. The CASP using the audit and analysis systems provide an overall assessment of the FAA maintenance organizations and equipment for their compliance with prescribed policies, procedures and effectiveness of the continuous airworthiness maintenance program.
CASS	Continuing Analysis and Surveillance System
CHDO	Certificate Holding District Office
CM	Condition Monitoring is a maintenance process for items having neither hard-time nor on-condition maintenance as their primary maintenance process. CM is accomplished by appropriate means of finding and solving problem areas. Components and systems so identified are maintained in continuous airworthiness condition by means of data collection and analysis involving the whole population of an item or a system.
Component Type	Like units that have the same fit, form or function for specific fleet type.
Critical Failure	A failure in which a loss of function or secondary effects of failure impair the airworthiness of the aircraft or the safety of operations.
*Delay	For the purpose of this program a delay is defined as any suspension of a scheduled flight for thirty (30) minutes or greater due to known or suspected aircraft mechanical problems.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

Direct-Adverse Effect on Safety	Direct: Achieves its effect by itself, not in combination with other functional failures (no redundancy exists and is a primary dispatch item).
Engine Performance Trend Monitoring	<p>The EPTM program is a process of recording engine instrument readings at a steady-state cruise condition (for at least five minutes) and then comparing them to a typical "Theoretical" engine. The differences obtained are plotted and watched for further changes from the time of installation or Hot Section Inspection (HSI).</p> <p>The program, if properly supported by both Operations and Maintenance, can:</p> <ol style="list-style-type: none"> a. Locate potential engine problems and track gas path deterioration. b. Permit planning time for repairs to be accomplished at the safest and most economical time. c. Reduce troubleshooting time by directing maintenance actions to the area of the engine needing attention. d. Substantially reduce operating and maintenance costs. e. Permit on-condition maintenance in lieu of hard-time.
Engine Failure	Any internal or external damage, distress or malfunction of a basic Engine that results of voluntary or involuntary stopping of the Engine's operations.
EO	Engineering Order
EPTM	Engine Performance Trend Monitoring
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

Failure	The inability of a component or system to perform its intended function within acceptable limits.
Failure Rate	The ratio of the number of failures of an item during a specified period to the total experience of all units in operation during that period, usually expressed as operating hours per failure.
FICO	Flight Inspection Central Operations
Functional Check	That procedure required to ascertain that a system or unit is functioning in all aspects in accordance with minimum acceptable system or unit design specifications.
GMM	General Maintenance Manual, TI 4100.24
HFI	Human Factors Investigation
HT	Hard-Time: A maintenance process by which a component is scheduled for removal at a specific interval for overhaul in accordance with applicable shop manual procedures.
Hidden Function	A function whose failure will not be evident to the operating crew during the performance of normal duties.
HSI	Hot Section Inspection
In-Flight Shutdown	Controlled shutdown of an engine by the pilot as a response to evidence of unsatisfactory conditions.
MAB	Maintenance Analysis Bulletin
MAD	Maintenance Alert Directive
MEDA	Maintenance Error Decision Aid
Mean Time Between Failure (MTBF)	A performance figure calculated by dividing the total unit flying hours (airborne) accrued in a period by the number of confirmed unit failures that occurred during the same period.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

Mean Time Between Removals (MTBR)	A performance figure calculated by dividing the total unit flying hours accrued in a period by the number of unit removals (scheduled plus unscheduled) that occurred during the same period.
MSG-2	Maintenance Steering Group - 2 established the criteria for classifying maintenance processes.
MSG-3	Maintenance Steering Group - 3 establishes the criteria for maintenance task and interval revisions.
OC	On Condition - A maintenance process by which a determination of continued airworthiness may be made by periodic visual inspection measurements, tests or other means without a tear-down inspection or overhaul. This is a preventive primary maintenance process.
Overhaul	The disassembly, cleaning, inspection, necessary replacement or repair of parts, reassembly, adjustment and testing of an item or equipment in accordance with recommended procedures.
PMI	Principal Maintenance Inspector
SSE	AVN Safety Significant Event
Standard	A mathematical term used to measure the dispersion or spread deviation about the mean. The standard deviation is designated by the symbol σ (sigma).
Subsystem	The divisions within the systems as typified by the separation of compression, distribution, pressurization, control, etc., within the Air Conditioning System, as designed by the ATA 100 System.
System	The primary divisions within the aircraft as typified by the listing of communications, air-conditioning, etc., as separate entities, as designed by the ATA 100 System.
TIS	Time in Service
Unscheduled Removal	The removal of an item brought about as a result of a known or suspected malfunction.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER I. GENERAL

1. GENERAL

A. BACKGROUND

- (1) The FAA has statutory responsibility to maintain a safe, common system for the use of airspace and operation of aircraft therein. To effect a safe air transportation system, FAA pursues an aggressive research and development, test and evaluation program of the air navigation, control, communications and aircraft operations, including standards development and training. To accomplish this responsibility, the FAA operates a fleet of aircraft to perform its mission.
- (2) AVN aircraft maintenance activities will be conducted in compliance with applicable FAR's, Agency Directives, policies and procedures as stated in this manual. It is the responsibility of all employees to report any known deviation from this policy to their supervisor. Immediate appropriate action will be initiated by the supervisor to resolve the issue. AVN-300 managers will assure employees that they can bring safety related concerns to management without fear of reprisal, and with assurance of thorough and impartial disposition of the issue.
- (3) In the event of conflict between a FAR and the Maintenance Reliability Program Manual (MRPM) or other FAA supplied instructions, the FAR has precedence. In the application of a Regulation, directive, policy or procedure to a particular situation, safety of persons and property is paramount.

(B) ORGANIZATIONAL MISSIONS

- (1) AVN is tasked with the responsibility to manage the AVN Flight Program. This management includes providing policy, delegating authority, establishing procedures and assigning responsibility for operation, maintenance, acquisition and disposal of AVN aircraft.
- * (2) Aircraft Maintenance and Engineering Division (AMED), AVN-300, is responsible for the management of the AVN Aircraft Inspection and Maintenance Programs set forth by the Director of AVN. AVN-300 shall provide technical support and ensure compliance with the approved aircraft inspection and maintenance programs contained within the system.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER I. GENERAL

2. PROGRAM DESCRIPTION

- A. AVN has developed a MRPM in accordance with the FAA approved guidelines provided in Advisory Circular 120-17A, Maintenance Control by Reliability Methods, and FAA Order 8300.10, Aviation Safety Inspectors Handbook, Volume II, Chapter 66.
- B. This program manual identifies and describes the organizational structure, administrative roles, and reliability control mechanisms utilized in defining, measuring, and controlling maintenance effectiveness and operational reliability.
- C. The AVN Maintenance Reliability Program is administered through the application of the following FAA approved reliability control methods and guidelines as provided in Advisory Circular 120-17A and FAA Order 8300.10, Aviation Safety Inspectors Handbook, Volume II, Chapter 66:
 - (1) Data Collection
 - (2) Data Analysis
 - (3) Corrective Action
 - (4) Statistical Performance Standards
 - (5) Data Display and Reports
 - (6) Maintenance Interval Adjustment/Process Change
 - (7) Maintenance Program Revision
- D. The program describes the reliability control applications utilized to promptly identify areas of deterioration, as well as the processes utilized for implementing and monitoring corrective actions.
- E. The program describes the approved procedures for implementing adjustments to maintenance and inspection intervals, time limitations, and overhaul limits of the aircraft engines, and associated appliances and checks of the airframes.
- F. The program identifies the means for changing primary maintenance processes, reliability control methods, and implementing changes to the MRPM.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- G. The Maintenance Reliability Program serves to play a significant role in administering a Continuing Analysis Surveillance System (CASS) required by FAR 135.431. Other elements concerning the administration of CASS are provided in the AVN GMM, and Continuing Analysis and Surveillance Program (CASP).

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER I. GENERAL

3. MANUAL STRUCTURE

A. GENERAL

The AVN Maintenance Reliability Program Manual is in loose-leaf and electronic form and is structured as follows:

- (1) Record of Change - Provides space for recording insertion of revisions.
(VN Form 4100-65)
- (2) Introduction - Self-explanatory.
- * (3) Master Table of Contents - A Master Table of Contents, located in the front of this manual, will list the chapter and section titles and beginning page number and show change status of each page in the Master Table of Contents. It will also show the change status of each chapter and section.
- * (4) Terms, Abbreviations and Acronyms - Located following the Master Table of Contents, provides a list of abbreviations used by FAA/AVN personnel.
- (5) Chapters - Sequentially numbered, beginning with Roman number I (one).
- (6) Sections - Sequentially numbered with Arabic numbers beginning with number one (1), as in IV.1.
- (7) Pages - Pages are sequentially numbered. Each page number begins with the chapter number followed by a decimal (.), section number followed by a decimal and the page number. This number is located on the lower corner of each page, e.g. II.10.1.
 - (a) Date - Date of each page will be listed on the top of each page. This signifies the latest revision date for that page. The date format will be listed numerically as month/date/year, e.g., 11/15/01.
 - (b) Change number - A number will be shown in the corner under the TI number, indicating the revision number of that page.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER I. GENERAL

4. REVISION SYSTEM

A. GENERAL

- (1) The revision system provides methods to ensure new information can be incorporated into the approved TI manual system. The basic manual is revised on an as-needed basis.
 - (a) Revisions - The method of revision is done by issuing page changes, as required, which contain all needed changes developed by the date of issue. Revision to the electronic version, on the AVN website, will be made upon issuance of the manual change.
- (2) Action to correct misspelled words or to improve sentence structure will be held until a revision is made.

B. REVISIONS

- (1) Changes to the basic manual will be issued as "page changes" ready for insertion. A Transmittal Page will accompany all changes issued, and is identified by a black rectangle located in the upper left hand corner with the word CHANGE contained therein. The Transmittal page will identify the manual being changed, indicate the change number, show the effective date of the change(s), provide a synopsis of the major changes, and include a Page Control Chart to indicate the pages to be removed and/or inserted, as appropriate.
- (2) A RECORD OF CHANGES page, VN Form 4100-65, is included in the front of each manual to record the date the change was inserted into the manual. This page will provide a quick reference for determining the revision status of the specific manual.
- (3) If most of the data in a paragraph or section has been revised, an asterisk will be placed at the highest level to indicate that all the data in the section or paragraph has been revised. The asterisk will be removed at subsequent revisions so that only changes made by the current revision are indicated.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

C. REVISIONS RESPONSIBILITIES

(1) AVN-300 is responsible for:

- (a) Assuring this Manual and maintenance training programs meet regulatory compliance.
- (b) Standardization of manual format.
- (c) Ensuring manufacturer manual changes are incorporated into the applicable Technical Issuance.
- (d) Control of changes for this Manual.
- (e) Printing of the manual and changes.
- (f) Obtaining distribution of the manual and changes.
- (g) Soliciting comments and making necessary corrections.
- (h) Make this Manual or appropriate portions available to any person performing maintenance or ground operation on FAA aircraft.

(2) Users are responsible for:

- (a) Forwarding suggested corrections and changes to the Program Standards Section, AVN-328, for processing.
- (b) Maintaining assigned manuals, including changes. Each person issued a copy of this manual is responsible for inserting all revisions and being familiar with its contents.
- (c) Personnel making copies of pages in this Manual or off the WEB are reminded that these copies are only valid for immediate use.

NOTE: Any copies or sections of this Manual must be destroyed or disposed of after use. These copied pages or sections are not to be stored, filed or stockpiled.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

D. SUGGESTED CHANGES

Suggested manual changes will be forwarded using Request for Action, VN Form 4100-170, through the employee's supervisor, to the Supervisor, AVN-328, for review and processing. All proposed changes will be reviewed for compliance with AVN policy and regulatory requirements before submittal to the AVN MRB.

A copy of all -170 forms incorporated will be retained on file for a period of one year, in the Program Standards Section, AVN-328, or until the next change in the same area, whichever occurs first.

E. PROCESSING CHANGES

(1) Revisions: Revisions to this Manual will be developed from the requests for changes accumulated for that period. All proposed changes will be addressed. Upon completion, the change will be developed and submitted to the AVN MRB for approval.

(2) When a revision is required to the MRPM, the Program Standards (Reliability) Section, AVN-328, is responsible for submitting the amended page(s) and the amended List of Effective Pages to the AVN MRB members for review and approval.

*(3) All revisions to the MRPM require majority approval by the designated members of the AVN MRB with affirmation of the Director of Maintenance, AVN-300.

(4) The following changes to the MRPM require FAA CHDO approval prior to implementation:

- (a) Reliability measurement.
- (b) Changes involving performance standards, including instructions relating to the development of these standards.
- (c) Data collection system.
- (d) Data analysis methods and application to the maintenance program.
- (e) Primary maintenance process changes (non-alert type programs).

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (f) Adding or deleting components/systems.
- (g) Adding or deleting aircraft types.
- (5) Upon approval by the AVN MRB members, the Reliability Section is responsible for submitting applicable amended page(s) and the amended List of Effective Pages to the assigned FAA CHDO Inspector for review and approval as required. The FAA CHDO Inspector approves revisions by stamping the amended List of Effective Pages with an approval stamp, including the inspectors signature and current date.
- (6) Upon final approval of each revision, the Reliability Section ensures a CHANGE SHEET is prepared and revisions are promptly distributed to all manual holders. Each manual holder is personally responsible for inserting revisions into their respective manuals and for maintaining manual in current revision status. Changes to the electronic version will be made upon issuance of the manual change.
- (7) This change will supersede all previously issued revisions. The Quality Assurance Branch, AVN-320, is responsible for development, review, revisions, coordination, formatting revisions indicators and regulatory compliance before printing and distribution of manual changes.

F. LIST OF EFFECTIVE PAGES (LEP)

The Master Table of Contents contains the change number and date following the page number for each section.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER I. GENERAL

5. DISTRIBUTION AND ACCESS

A. GENERAL

Distribution of manuals will be processed by the Program Standards Section (Reliability), AVN-328.

*Hard copies of the Maintenance Reliability Program Manual (MRPM), TI 4100.25, will be maintained at the following offices:

- (1) Program Standards Section (Reliability), AVN-328
- (2) Certificate Holding District Office (CHDO)

*Access to the MRPM for other personnel is provided through a website located at "<http://avn.faa.gov/index.asp?xml=fimo/eml>".

B. LOCATION OF MANUAL AND COPY REQUIREMENTS

The Program Standards Section, AVN-328, controls and maintains the manuals and the Distribution List for TI 4100.25. AVN-328 will make available (as indicated in paragraph A) a copy of the manual, or appropriate portions, to any personnel performing maintenance or ground operations on FAA aircraft. AVN-328 identifies the required number of copies to meet distribution requirements.

- (1) Each organization receiving a manual will be responsible for its security, maintenance and currency. The person revising the manual will follow the instructions included with the revision as previously outlined in Section 4 of this chapter. Revision to the website will be made as changes are issued.
- (2) Request for distribution of additional copies of this manual should be made in writing to the Supervisor, Program Standards Section, AVN-328.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER I. GENERAL

6. PROGRAM APPLICATION

The Maintenance Reliability Program outlines the means of continually monitoring the mechanical and operational performance of the listed airframes, powerplants, and associated systems and appliances.

A listing of Hard Time, On-Condition and Condition Monitoring components monitored by this program is provided in the AVN Work Content Document for the applicable aircraft type.

A. AIRFRAMES/WORK CONTENT DOCUMENT

Beechcraft 300	Work Content Document	TI 4128.1
British Aerospace 125-800A	Work Content Document	TI 4125.1
Learjet 60	Work Content Document	TI 4107.1
Challenger 601-3R	Work Content Document	TI 4109.1

B. POWERPLANTS

Pratt & Whitney PT6A-60A	(Beech 300)
Garrett TFE-731-5R-1H	(BAe 125-800A)
General Electric CF34-3A1	(Challenger 601-3R)
Pratt & Whitney PW305A	(Learjet 60)

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

C. SYSTEMS AND APPLIANCES

*The systems and associated appliances of the airframes and powerplants monitored by the Maintenance Reliability Program are identified by primary Airline Transport Association (ATA) system codes 11, 12, 14, 15, 21-38, 43, 45, 49, 51-57, 61 and 71-80. Flight Inspection Systems are identified by ATA system codes under 4300 that are used exclusively by the AMED.

- D. Additional sub-system codes are assigned to primary ATA system codes by reliability to enable effective continuous analysis and surveillance of the mechanical and operational performance of the aircraft, engines and related systems and appliances.
- E. The time limitations for overhauls, inspections and checks of airframes, aircraft engines, appliances and emergency equipment are provided in the AVN Work Content Document for the applicable aircraft type.
- F. In the event the MRPM is canceled, the maintenance programs covered by the AVN Work Content Documents will be reevaluated by the AVN MRB and the FAA/CHDO Inspector (PMI), prior to being placed under the CASP.
- G. AVN fleet aircraft not yet approved under this program will continue to be monitored and reported under the CASP. (GMM, Chapter III, Section 70).

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER II. ORGANIZATIONAL STRUCTURE

1. AVIATION SYSTEM STANDARDS (AVN) MAINTENANCE REVIEW BOARD (MRB)

- A. The AVN MRB is the Internal Technical Committee collectively responsible for the effective administration of the Maintenance Reliability Program.

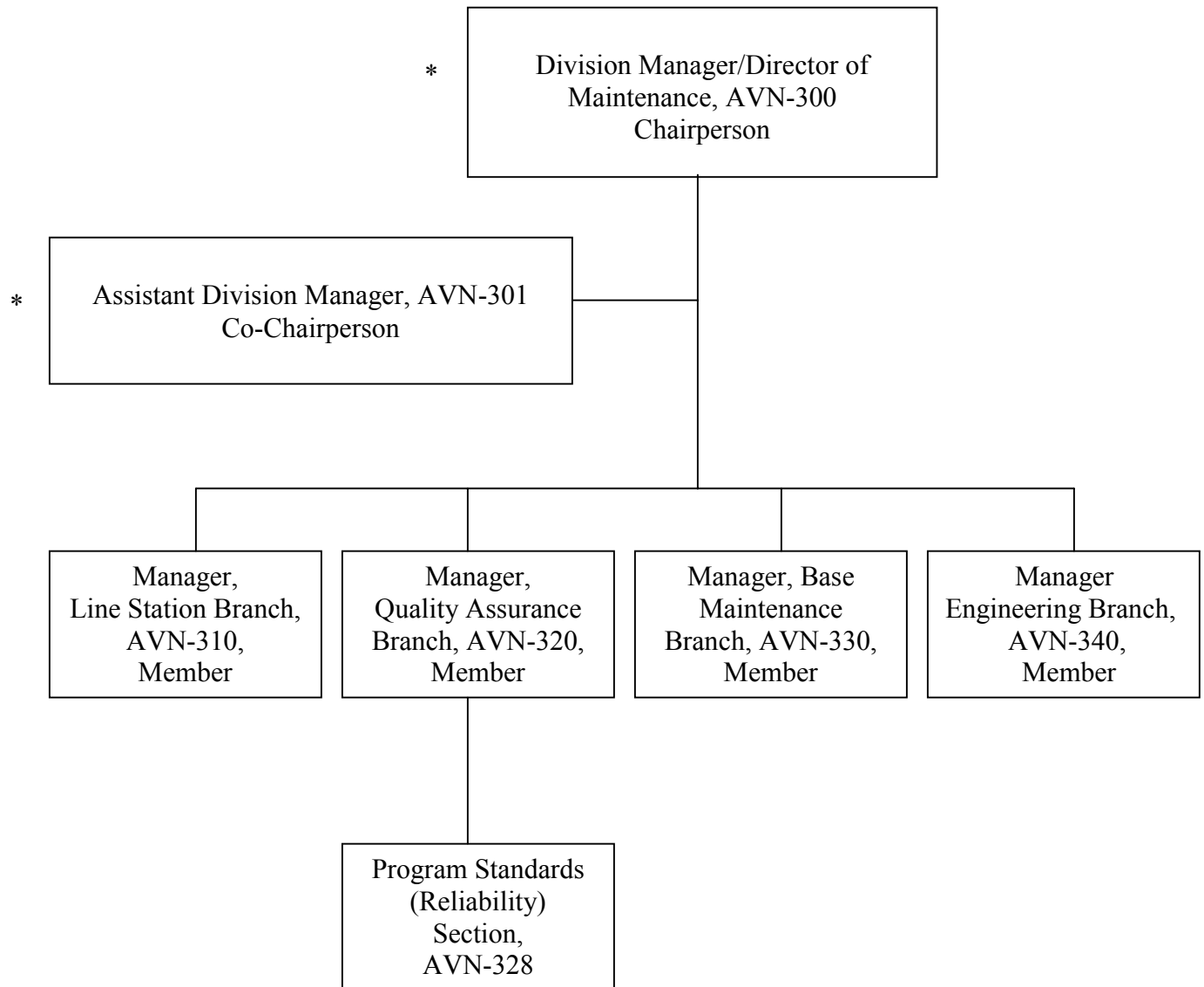
NOTE: The AVN MRB does not represent nor should it be misunderstood to represent the FAA affiliated MRB.

- *B. The designated members of the AVN MRB are the Division Manager/Director of Maintenance (Chairperson), Assistant Division Manager (Co-Chairperson), Manager of Quality Assurance Branch, Manager of Line Station Branch, Manager of Base Maintenance Branch and Manager of Engineering Branch.
- C. The AVN MRB ensures that every reasonable corrective measure is implemented to alleviate problem areas and to achieve and maintain acceptable operational performance levels.
- D. The AVN MRB members are the approving authority for all adjustments to time limitations for overhauls, inspections and checks of airframes, aircraft engines, appliances and emergency equipment.
- E. The AVN MRB members are the approving authority for specific changes to reliability control methods, performance standards and revisions to the MRPM.
- *F. Each of the designated members of the AVN MRB attend all scheduled meetings or may provide a designated representative to act on their behalf. Majority approval is required by designated AVN MRB members, with affirmation of the Director of Maintenance, AVN-300, for each change of maintenance/inspection intervals.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER II. ORGANIZATIONAL STRUCTURE

2. MAINTENANCE REVIEW BOARD ORGANIZATIONAL CHART



AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER II. ORGANIZATIONAL STRUCTURE

3. MAINTENANCE REVIEW BOARD (MRB) RESPONSIBILITIES

The AVN Maintenance Review Board Organizational Responsibilities and Lines of Authority Relating to the Administration of the Reliability Program are as follows:

- *A. Division Manager/Director of Maintenance, AVN-300
 - (1) Serves as chairperson of the AVN MRB and has the highest level of authority for all technical decisions affiliated with the AVN Reliability and Maintenance Programs. Attends scheduled meetings or provides a designated representative.
- *B. Assistant Division Manager, AVN-301
 - (1) Serves as co-chairperson and member of the AVN MRB and attends scheduled meetings or provides a designated representative.
- C. Manager, Line Station Branch, AVN-310
 - (1) Serves as a designated member of the AVN MRB and attends scheduled meetings or provides a designated representative to act on his behalf. Provides staff advisory relative to planning and scheduling.
- D. Manager, Quality Assurance Branch, AVN-320
 - (1) Serves as a designated member of the AVN MRB and attends scheduled meetings or provides a designated representative.
 - (2) Supervises the following sections: Quality Control, AVN-324 and Program Standards, AVN-328.
 - (3) The Quality Assurance Branch is responsible for the following:
 - (a) Directly responsible for administration and management of the AVN Maintenance Reliability Program by maintaining a system of continuous analysis and surveillance of the overall Continuous Airworthiness Maintenance Program (CAMP).
 - (b) The inspection portion of the maintenance program (including required inspections).

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (c) All maintenance related Technical issuance manuals and forms.
 - (d) Management of CASP.
 - (e) Management of the Engine Performance Trend Monitoring (EPTM) program.
- E. Manager, Base Maintenance Branch, AVN-330
 - (1) Serves as a designated member of the AVN MRB and attends scheduled meetings or provides a designated representative.
- F. Manager, Engineering Branch, AVN-340
 - (1) Serves as a designated member of the AVN MRB and attends scheduled meetings or provides a designated representative.
- G. Reliability Section, AVN-328
 - (1) Provides information and technical advice, where appropriate, to the AVN MRB and formally reviews aircraft reliability and performance reports and other technical issues during all scheduled MRB meetings.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER II. ORGANIZATIONAL STRUCTURE

4. AVN MAINTENANCE REVIEW BOARD (MRB) MEETINGS

A. Schedules and attendance

- (1) AVN MRB meetings are scheduled when issues require resolution. The significance of the issue dictates the schedule of the MRB meeting and is attended by designated permanent members or their alternate.
- (2) Additional representatives of Quality Control, Line Maintenance, Production Control, Reliability/Standards, Engineering System Support, Repair Station and Supply/Repair Vendors attend MRB meetings regularly to provide technical support during the meetings.
- *(3) The assigned CHDO Inspectors will be notified of all meetings with the exception of Human Factors Investigations.

B. Meeting Agenda

*

- *(1) AVN MRB agenda items are distributed to the board members by AVN-320 for study prior to convening an official meeting. MRB meetings are normally limited to the scheduled agenda unless an emergency requires an added topic. Records of the MRB meetings and pertinent comments are retained in the AVN-320 archives and are available to the CHDO upon request.
- *(2) The AVN MRB formally evaluates agenda items for significance, priority, cost effectiveness and establishes appropriate corrective actions as warranted. The AVN MRB, as necessary, may implement additional action assignments. The AVN MRB has overall authority to approve all changes and amendments to the CAMP.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER III. DATA COLLECTION PROCEDURE

1. DATA COLLECTION APPLICATION

The AVN Maintenance Reliability Program is dependent upon a significant amount of performance data from numerous sources to enable effective monitoring and analysis of this data and to initiate prompt reaction to degrading performance and adverse trends. Formal corrective actions will occur as warranted.

- A. The Data Collection System includes the following sources:

Pilot Reports

*Dispatch Reliability

Engine Performance Trend Monitoring

Engine Shutdowns

Unscheduled Engine/Propeller Removals

Non-Routine Work Forms

Manufacturer and Operator Statistical/Analytical Data

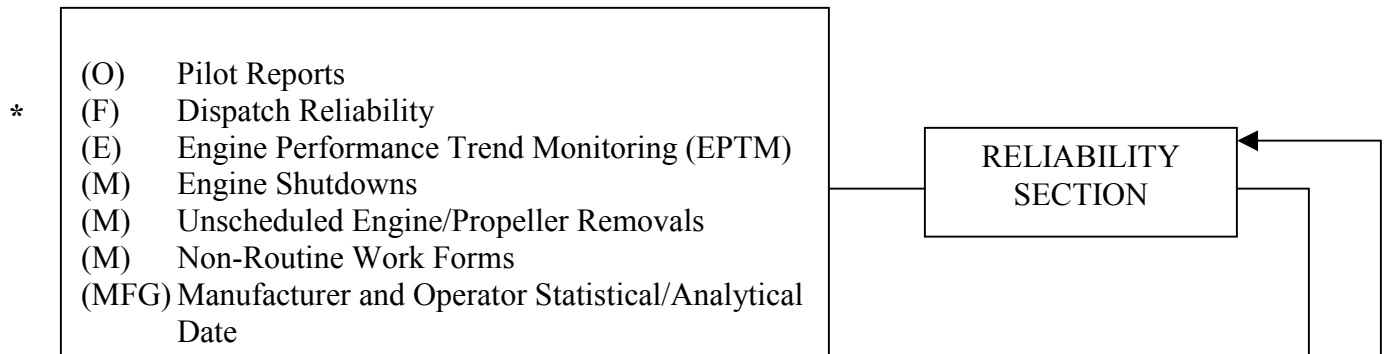
- B. Numerous forms, reports and documents are utilized to provide the necessary information to Reliability for analysis. Examples of these documents that are discussed throughout this manual are exhibited in Chapter VIII, Section 2.
- C. The diagram on the following page delineates the comprehensive program operation flow cycle relative to data collection, analysis, reporting and management responsibility for the AVN Maintenance Reliability Program.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

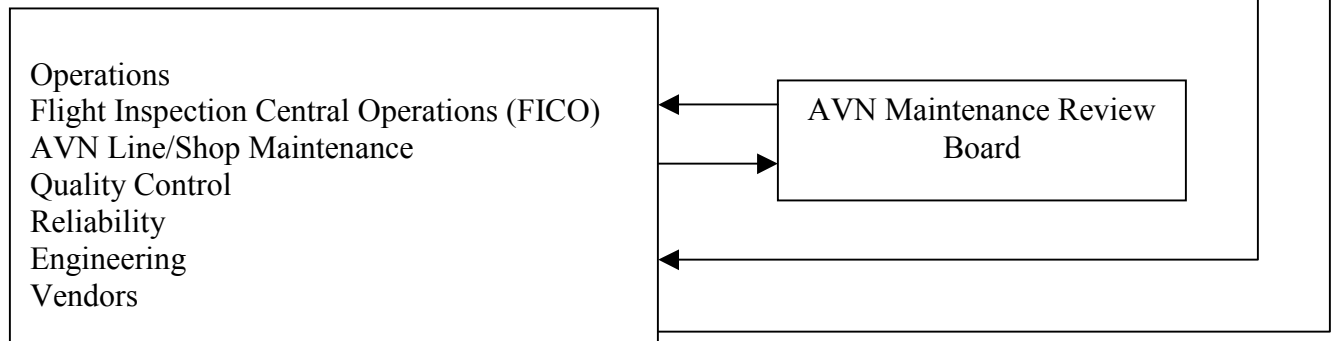
CHAPTER III. DATA COLLECTION PROCEDURE

2. DATA COLLECTION FLOW DIAGRAM

RAW SOURCE DATA



AVN MAINTENANCE ELEMENTS



RESPONSIBLE ELEMENTS

- (O) Operations
- (F) Flight Inspection Central Operations
- (M) AVN Line/Shop Maintenance
- (P) Quality Control
- *(E) Program Standards
- (Q) Reliability
- (V) Vendors
- (MFG) Manufacturer

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER III. DATA COLLECTION PROCEDURE

3. RELIABILITY SOURCE DATA

A. Pilot Reports

- (1) Pilot reports provide a rapid means of monitoring the performance of aircraft systems, powerplants and components.
- (2) Flight crew personnel record observed mechanical and/or electrical-electronic discrepancies of the aircraft systems. In addition, discrepancies and malfunctions of the flight inspection system are recorded. All recorded data is entered on VN Form 4100-8, Aircraft Log. (Reference Chapter VIII, Section 2).
- * (3) The completed log sheets are routed to Aircraft Records Section, AVN-324, for screening, auditing and processing. A copy is then forwarded to the Program Standards Section, AVN-328, they are compared to ILM entries.
- (4) Upon completion of data processing, log sheets are maintained by Aircraft Records for inclusion into the appropriate aircraft historical files.
- (5) Maintenance monitors performance of the aircraft through daily screening of pilot report data to detect repeat write-ups on the aircraft, engines or systems.
- (6) The Reliability Section maintains surveillance of the pilot report data to further isolate and identify aircraft, systems and/or components that exhibit adverse trends, degraded performance, or other conditions that may require corrective action.
- (7) The Pilot Report rate, including statistics and alerts, is calculated monthly and reported quarterly in the Fleet Reliability Report (also available upon request). The performance rate is based on monthly flight hours.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

B. Dispatch Reliability

- (1) The AVN aircraft flight inspection operating fleet mission scheduling is performed by Flight Inspection Central Operations (FICO). This section is ultimately responsible for providing and collecting details on fleet delays and cancellations.
- (2) Occurrences that result in interruptions of greater than 30 minutes meet the criteria of a delay. Cancellations occur under variable conditions with a time variance of two to three hours.
- (3) The FICO maintenance coordinators output delays and cancellations on FICO Dispatch Deviation Form 001 (reference Chapter VIII, Section 2). This is transmitted to the Reliability Section daily for evaluation.
- (4) The Reliability Section audits each report from the FICO for detail and accuracy for processing into the PC computer database.
- (5) The dispatch reliability rate is reviewed daily for adverse trends, including statistics and alerts, and reported quarterly in the Fleet Reliability Report (also available upon request). Cumulative (yearly) statistics are provided along with performance chart. Flight schedules and departures are transmitted to the Reliability Section by the FICO.

C. Engine Performance Trend Monitoring (EPTM)

- (1) The Quality Assurance Branch Manager, AVN-320, is responsible for the administration and management of the EPTM program for the AVN aircraft fleet.
- (2) Aircraft computer generated engine data is downloaded weekly or at the direction of the program administrator for transmission to the Program Standards Section, AVN-328, and EPTM coordinators (refer to current EO 89-C-10 or replacement).
- (3) Computer data cartridges or Data Point Entry Forms are read and system updated daily by the EPTM coordinators. The EPTM coordinators analyze computer-generated data for discrepancies or trends.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (4) Discrepant or insufficient data replacement is requested immediately by the EPTM coordinator from the aircraft operator. EPTM/SI Maintenance Recommendation forms, VN Form 4100-9, are sent to the Base Maintenance and Line Station Branches by the program analyst.
- (5) The maintenance supervisor is notified immediately when an engine displays degraded performance or trended irregularities by the applicable EPTM computer program.
- (6) An EPTM/SI Maintenance Recommendation form (reference Chapter VIII, Section 2), is completed by the EPTM coordinator and forwarded to maintenance or operations as required to recommend maintenance action.
- (7) All engine related EPTM forms (reference Chapter VIII, Section 2), are filed by the EPTM coordinators and are available for review.

D. Engine Shutdowns

- (1) Engine shutdowns are a primary source for measuring the operational reliability and performance of the aircraft powerplants.
- (2) Shutdowns monitored by this program include all shutdowns that occur "block to block" caused by known or suspected mechanical malfunctions or irregularities.
- *(3) Quality Control is responsible for collecting detailed data for each occurrence and for preparation of the Mechanical Interruption Summary Report (MIS) (reference Chapter VIII, Section 2).
- (4) Each report is processed into the computer database and monitored by the Reliability Section for repeated occurrences and evidence of other adverse conditions or trends that may require remedial actions.
- (5) Engine Shutdown Summary Report (reference MIS, Chapter VIII, Section 2), are published in the Fleet Reliability Report.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

E. Unscheduled Engine/Propeller Removals

- (1) Unscheduled engine or propeller removals are a primary source for measuring the operational reliability and performance of the aircraft powerplants/propellers.
- (2) Each engine or propeller removal is recorded in the aircraft maintenance records. Removals that result from shutdowns or critical failures are also recorded on the MIS Report (reference Chapter VIII, Section 2).
- (3) Each report is processed into the computer database and monitored by Reliability for repeated occurrences and evidence of other adverse conditions or trends that may require remedial actions.
- (4) Unscheduled engine/propeller removal summary reports (reference Chapter VIII, Section 2), performance statistics and performance graphs are published in the Fleet Reliability Report.

F. Non-Routine Work Forms, VN Form 4100-155

- *(1) Procedures for controlling/recording Non-Routine Work forms (reference Chapter VIII, Section 2), are provided in the GMM, Chapter IV, Section 97. This document is the primary source for identifying maintenance work completed outside of Aircraft Log entries (reference Chapter VIII, Section 2).

*

G. Manufacturer and Operator Statistical/Analytical Data

- (1) Communiqués
- (2) Service Information Letters
- (3) Service Instructions
- (4) Service Bulletins
- (5) Airworthiness Directives
- (6) Service Difficulty Reports

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER IV. DATA ANALYSIS PROCEDURES

1. RELIABILITY PERFORMANCE PARAMETERS

- A. Reliability analysis is conducted by comparison of actual aircraft and powerplant performance statistical data to designated performance parameters.
- B. Performance parameters are selected on the basis of their ability to effectively represent reliability of the system being measured.
- C. The performance parameters utilized in the AVN Maintenance Reliability Program are listed below:

(1) Pilot Reports x 100 ÷ Flight Hours (TIS).

*

*

*

D. Performance Standards and Alert Levels

- (1) The establishment and application of Performance Standards and Alert Levels is the key to signaling accurate and proper system alerts through the statistical analysis of raw data.
- (2) Initial performance standards are established utilizing six consecutive months of compiled performance data. As additional aircraft enter the fleet, data will be collected, processed and absorbed by direct inclusion into the population sample and will be monitored in aggregate.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (3) The Alert Level is calculated and established according to the unbiased sample standard deviation method as shown below. The standard deviation formula is applied to the average monthly rate, resulting in the mean monthly rate plus two (2) standard deviation.

$$\text{Standard Deviation} = \sigma = \sqrt{\frac{\sum X^2 - \frac{(\sum X)^2}{N}}{N - 1}}$$

X = Monthly Rate

N = Statistical Population = Number of Months in Control Period

Σ = Sum of

$$\bar{X} = \text{Mean} = \frac{\sum X}{N}$$

$$\text{Alert Level} = \bar{X} + 2\sigma$$

Watch Level = 3 consecutive month rate increase that does not reach the alert level.

- (4) The mathematical formula utilized in the data analysis system is an accessible module in the Reliability tracking program (Excel) and used to calculate the Performance Standards and Alert Levels.
- (5) Alert levels may be reduced below the calculated maximum to make the system more sensitive to trend deviations, but in no case shall it be raised above the statistical maximum.
- (6) The CHDO must approve of any change to the performance standard process.

E. Statistical Performance Standards - Alert System

- (1) The AVN Fleet Maintenance Reliability Program utilizes a surveillance system based on an alert generating process for the purpose of monitoring and identifying the performance of the aircraft and engine associated systems.

(a) Pilot Reports

A primary ATA system is defined as **ALERTED** when the three (3) month cumulative performance rate exceeds the established Performance Standard.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

*F. Dispatch Reliability

- (1) The AVN aircraft flight inspection operating fleet mission scheduling is performed by Flight Inspection Central Operations (FICO). This section is ultimately responsible for providing and collecting details on fleet delays and cancellations.
- (2) Occurrences that result in interruptions of greater than 30 minutes meet the criteria of a delay. Cancellations occur under variable conditions with a time variance of two to three hours.
- (3) The FICO maintenance coordinators output delays and cancellations on FICO Dispatch Deviation Form 001 (reference Chapter VIII, Section 2). This is transmitted to the Reliability Section daily for evaluation.
- (4) The Reliability Section audits each report from the FICO for detail and accuracy for processing into the PC computer database.
- (5) The dispatch reliability rate is reviewed daily for adverse trends, including statistics and alerts, and reported quarterly in the Fleet Reliability Report (also available upon request). Cumulative (yearly) statistics are provided along with performance chart. Flight schedules and departures are transmitted to the Reliability Section by the FICO.

*G. Adjusting Performance Standards and ALERT Levels

- (1) Performance Standards and ALERT values are recalculated at the end of each calendar year using the previous 12 months operating data.
- (2) The Reliability Section maintains continuous surveillance to ensure that Performance Standards and ALERT levels reflect realistic levels of performance measurement.

*H. Data Analysis Process

- (1) The object of the data analysis system is to:
 - (a) Recognize the need for corrective action.
 - (b) Determine what corrective action is needed.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

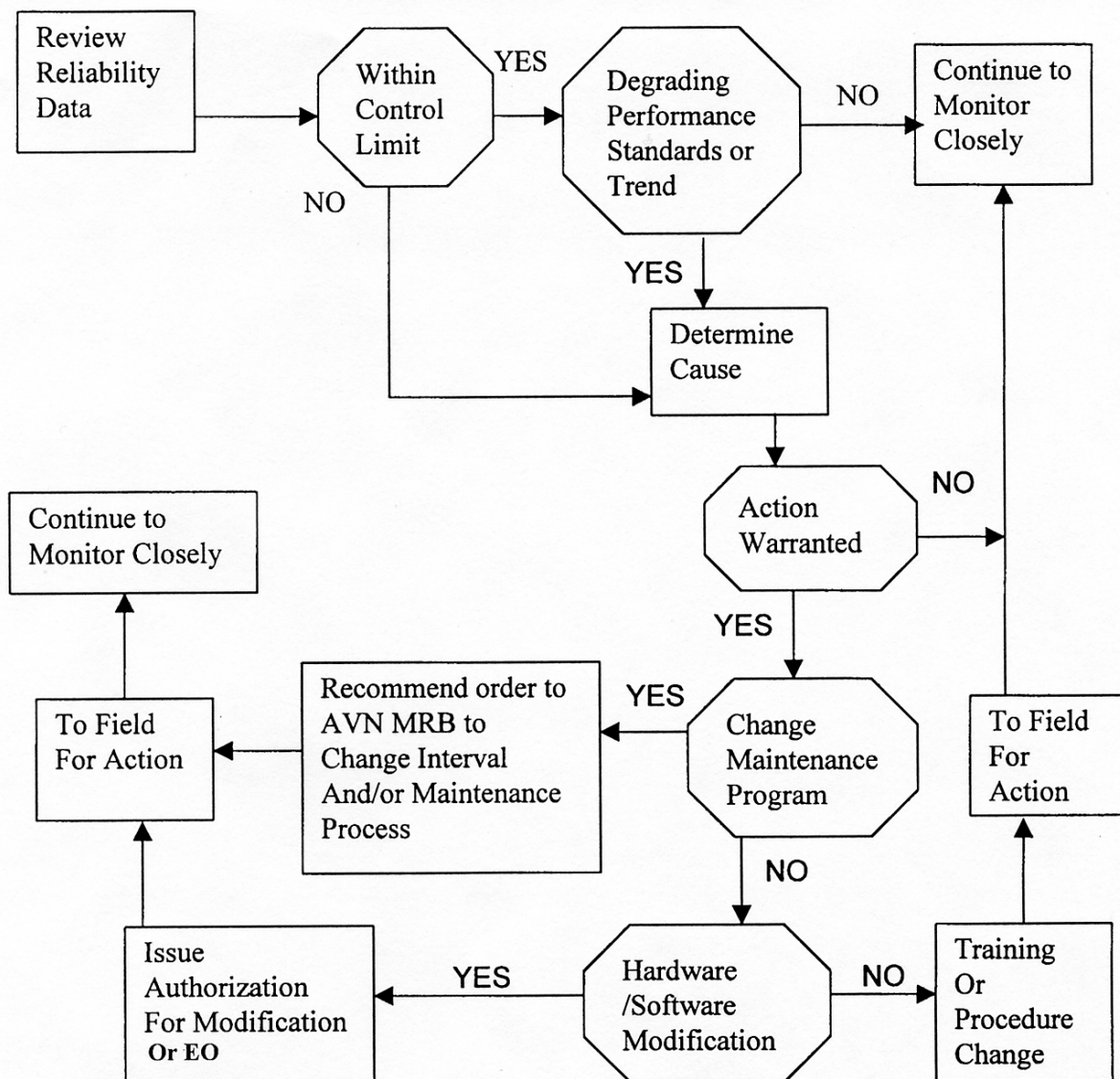
- (c) Determine the effectiveness of the action(s). (Follow-up monitoring).
- (2) The Reliability Section continually monitors and analyzes the performance of the aircraft and engine systems and associated components with the ultimate objective of improving upon the maintenance and inspection program to provide optimum levels of safety, reliability and economic efficiency for the AVN Aircraft Fleet.
- (3) When the reliability of an item has deteriorated excessively from the Performance Standard, an analysis is conducted by Reliability to determine cause. The analysis process includes, but is not limited to, the following methods and characteristics:
 - (a) Number of occurrences (confirmed or unconfirmed) relative to time periods.
 - (b) Correlation by aircraft tail number.
 - (c) Parts removed and replaced.
 - (d) Serial number of parts removed and replaced.
 - (e) Needed changes in line maintenance practices.
 - (f) Needed changes in shop maintenance procedures.
 - (g) Evaluation of repair/overhaul vendor.
 - (h) Needed changes to primary maintenance program.
 - (i) Needed additions or changes in training program.
- (4) Computerized historical files and other compiled data sources are utilized and closely monitored to identify degrading trends and other signs of deteriorating performance in efforts to initiate prompt effective corrective actions. Reliability notifies the appropriate organizational element(s) to carry out the necessary corrective action(s).

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (5) Analysis results and significant findings are compiled by Reliability and presented to Maintenance/Engineering personnel at the quarterly AVN Fleet Reliability meetings. Significant and/or critical items pertaining to the AVN aircraft fleet are presented to the MRB for action.
- (6) A flow chart is provided on the following page that depicts the data analysis process administered in this program.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

RELIABILITY ANALYSIS FLOW DIAGRAM



AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

I. Critical Failure Procedures

(1) General

*The Aircraft Maintenance and Engineering Division is committed to correcting all items considered **Critical Failures** and taking the necessary action in preventing recurrences. The occurrence or detection of a failure malfunction or defect in an aircraft during flight, which has or may endanger the safe operation of the aircraft may include a **Critical Failure** and are required to be reported by FAR 135.415, and the GMM, Chapter III, Section 61.

*Critical failures that are determined to be Safety of Flight items receive priority AVN MRB processing in implementing corrective actions. Priority Analysis/Corrective Action processes shall commence as soon as feasible.

(2) Procedure

(a) The Quality Assurance Manager, AVN-320, shall review all Mandatory Reportable Items for Critical Failures.

1 Appropriate aircraft maintenance discrepancy/status data will be submitted to AVN-320 or designee for analysis. This data could include telecom and FAX.

*2 AVN-320 or designee will contact the Director of Maintenance, AVN-300, or designee, and provide all pertinent information for decision to convene the AVN MRB and start the Corrective Action process.

(3) Corrective Action Process

(a) The AVN MRB will formulate and approve a Corrective Action following the guidelines in the GMM, Chapter III, Section 70. A copy will be provided to the Quality Assurance Manager or designee for distribution to the appropriate branch manager for action. A copy will also be sent to the Program Standards (Reliability), AVN-328.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- *(b) The Reliability Section will monitor progress of the approved plan and provide periodic reports to the Director of Maintenance, AVN-300, and Quality Assurance Manager or designee.
- (4) Follow-Up
 - (a) If required, the Program Standards Section, AVN-328, will submit to the CHDO a Service Difficulty Report (reference Chapter VIII, Section 2), as required by FAR 135.415 using guidelines provided in the GMM, Chapter III, Section 61.
 - (b) The Reliability Section will:
 - 1 Include a brief summary of the critical failure and the corrective action plan in the Fleet Reliability Report.
 - 2 Continue to monitor the aircraft fleet subsystem discrepancies for corrective action plan effectiveness.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER V. CORRECTIVE ACTION PROCEDURE

1. CORRECTIVE ACTION APPLICATION

A. Corrective Action Application

- (1) Continuous monitoring and thorough analysis of available data enables prompt detection of areas that may exhibit evidence of deteriorating performance or presence of adverse conditions and trends.
- (2) Causes of the degraded performance or trends are analyzed by Reliability and appropriate corrective actions are taken to restore the subject system(s) to acceptable performance levels.
- (3) Corrective actions may include, but are not limited to, the following:
 - (a) Specified or special maintenance action.
 - (b) Improved troubleshooting techniques.
 - (c) Maintenance/Inspection interval adjustments.
 - (d) Fleet Inspections.
 - (e) Development of improved training requirements.
 - (f) Unit modification or system upgrade.
 - (g) Maintenance/Inspection procedural revisions.
 - (h) Primary maintenance process change.
- (4) Through continuous surveillance and monitoring of available performance data, Reliability conducts the necessary analysis to determine causes of degrading performance or adverse trends and submits appropriate recommendations to the AVN MRB.
- (5) The AVN MRB assesses all recommended corrective actions or action plans and may exercise action directives and/or assignments as warranted.
- (6) Scheduled corrective action plans require completion within a ten (10) to thirty (30) workday window, depending on the complexity of the plan. Variables that affect the scheduling of planned corrective actions are: the effects on safety, impact on scheduled operations, associated costs, and availability of resources. All corrective action plans will be implemented in the most reasonable and prudent manner.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (7) The Reliability Section is responsible for monitoring and analyzing the effectiveness of corrective measures taken and reporting the progress and status thereof during the next scheduled AVN MRB meeting.
- (8) All corrective actions implemented are a matter of record and are maintained on file, for a period of one year, in the Quality Assurance Branch, AVN-320.

B. Repeat Pilot Reports

- (1) The Reliability Section maintains a system to enable continual monitoring and control of repeat discrepancies on aircraft systems.
- (2) The primary objective of maintaining absolute control of repeat pilot reports is to eliminate redundant corrective actions and reduce costs associated with occurrences of repetitive and/or unnecessary component removals.
- (3) Discrepancies, within ATA subsystems (including Flight Inspection Systems) that recur more than ten times during a 30 day period, are considered **repeat** pilot reports.
- (4) The Reliability Section monitors pilot reports daily to properly identify evidence of deteriorating performance or presence of adverse conditions and trends. When it is determined that a repeated problem has not been resolved and further actions are required, a Maintenance Analysis Bulletin, VN Form 4100-136, (reference Chapter VIII, Section 2), will be issued to the Maintenance and/or Engineering Branch to address the specific problem and recommend corrective actions.
- (5) The Maintenance Branch directs or schedules the corrective action(s). As all corrective actions are completed, the Maintenance Branch closes out the original Maintenance Analysis Bulletin, VN Form 4100-136, (reference Chapter VIII, Section 2), and returns it to Program Standards Section, AVN-328.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (6) In the event that an aircraft continues to exhibit repeat problems with a system or systems after unsuccessful attempts have been made to correct the problems, the Manager, Base Maintenance or Line Station Branch determines the necessity of removing the aircraft from service until causes of the specific problems are successfully isolated and completely rectified.

C. Maintenance Analysis Bulletin (MAB)

- (1) The MAB, VN Form 4100-136, (reference Chapter VIII, Section 2), is the primary vehicle utilized to recommend or direct various actions to the field pertaining to repeated or chronic pilot reports, oil sample alerts, and irregularities or performance trends identified through the Analysis System.
- *(2) As a system's three-month performance rate exceeds the established Alert Level, or adverse conditions and/or performance trends are identified, a MAB will be issued by Reliability to address the specific problem. Critical failure MAB's will be hand-delivered to the appropriate personnel to assure prompt action is taken.
- *(3) Each MAB will provide sufficient supporting information to properly identify the specific problem encountered.
- (4) MAB's are addressed to the Maintenance and/or Engineering Branch to schedule and/or implement specific corrective actions, as appropriate.
- *(5) As all remedial/corrective actions are addressed, the original MAB's are to be closed out by the Maintenance and/or Engineering Branch and returned to the Reliability Section within ten (10) working days. In the event that specific actions cannot be promptly implemented, the Quality Assurance Branch, AVN-320, will be notified of the planned completion date.
- *(6) The AVN MRB reviews each MAB that recommends a change to the Continuous Airworthiness Maintenance Program(s) (CAMP) or that cannot otherwise be resolved. The AVN MRB determines if additional actions are required and delegates the necessary action(s) to the appropriate organizational element(s) accordingly.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (7) The Reliability Section monitors continued performance to ascertain that the remedial actions implemented have been effective in arresting the specific problems encountered.
- (8) All MAB's are a matter of record and are maintained on file in the Reliability Section.
- (9) A Maintenance Analysis Bulletin Summary provides a chronological listing of Bulletins for each month in the Fleet Reliability Report.

D. Engineering Order (EO)

*Various corrective measures may result in development and implementation of an Engineering Order (EO), VN Form 4100-5 (reference Chapter VIII, Section 2), which is an internal authorizing technical document used in processing, issuance, and compliance reporting of modifications, repairs or alterations. The GMM, Chapter III, Section 77, provides a detailed description of procedures pertaining to the use of the EO.

E. Maintenance Alert Directive (MAD)

Maintenance Alert Directives (MAD), VN Form 4100-69, (reference Chapter VIII, Section 2) are utilized in urgent situations to accomplish various maintenance or inspection tasks. The GMM, Chapter III, provides a detailed description of procedures pertaining to the use of the MAD.

F. Corrective Action Records

All special records, reports and documents pertaining to the Corrective Action System described in this chapter are maintained on file in the Quality Assurance Branch, AVN-320.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VI. INTERVAL ADJUSTMENT AND PROCESS CHANGES

1. INITIAL MAINTENANCE PROGRAM

- A. The MRB Document is developed through collective efforts of technical representatives of the FAA and aircraft manufacturers. This document allows aircraft operation to define the minimum initial scheduled maintenance requirements for new aircraft types.
- B. Maintenance recommendations may be incorporated into the Technical Issuance System.
- C. Manufacturer's recommendations or MRB Documents are used to establish specific maintenance processes.
- D. When no recommendations or guidance is available for maintenance program intervals, frequencies or processes, the following information will be used:
 - (1) Type of equipment and geographical area of operations.
 - (2) Type of operation and utilization.
 - (3) Other operator's service experience and service history.
 - (4) Aircraft System/Component Analysis Method as provided by applicable Maintenance Steering Group (MSG) programs.
 - (a) The MSG-2 analysis method will be applicable to all aircraft listed in Chapter I, Section 6, Program Application.
 - (b) The MSG-3 analysis method will be applicable to the Challenger 601-3R powerplant only. (General Electric CF34-3A1).
 - (c) Applicable FAA and industry guidance.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VI. INTERVAL ADJUSTMENT AND PROCESS CHANGES

2. MAINTENANCE PROGRAM ADJUSTMENTS

The AVN Maintenance Reliability Program provides a means of implementing improvements to its continuous airworthiness maintenance program with the objective of achieving optimum levels in safety, performance and reliability of the AVN fleet of aircraft. This program enables AVN to manage and control its own maintenance program by providing approved and acceptable means for adjusting maintenance/inspection intervals and component overhaul limits.

Specific items that are limited or affected by airworthiness directives, service life limits, FAA MRB limitations, or any other specific FAA limitation are not subject to revision under this program.

A. Maintenance and Inspection Interval Adjustments

- (1) Sampling analysis is an extensive evaluation process utilized in Reliability to substantiate increases to current maintenance check intervals. Detailed procedures are found in the GMM, Chapter III, Section 59.
- (2) Sampling criteria to extend maintenance/inspection intervals shall include, but is not limited to, the following analysis and evaluations:
 - (a) Presentation of significant statistical and visual observations from the exhibit aircraft checks.
 - (b) Analysis of non-routine inspection records from the exhibit aircraft checks.
 - (c) Analysis of structural irregularity history.
 - (d) Analysis of delays/cancellations reliability data corresponding to the exhibit aircraft.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (e) Analysis of pilot report performance history of the exhibit aircraft.
- (f) Manufacturer and operator statistical/analytical data.
- (3) Escalation of check intervals shall not be in conflict with corrective action programs or projects already in effect.
- (4) The Reliability Section initiates MRB Action Form, VN Form 4100-34, to escalate maintenance/inspection intervals. (Reference to Chapter VIII, Section 2). Adequate supportive technical data shall be provided to substantiate the proposed escalation.
- *(5) Majority approval is required by designated AVN MRB members, with affirmation of the Director of Maintenance, AVN-300, for each change of maintenance/inspection intervals.
- *(6) The Director of Maintenance, AVN-300, is responsible for the initiation and coordination of amendments to the AVN Operations Specifications with the CHDO, as required.
- (7) The Manager of Quality Assurance, AVN-320, ensures final revisions to affected pages of the AVN applicable Work Content Documents are prepared and distributed to all manual holders.
- (8) All AVN MRB forms initiated to extend maintenance/inspection intervals, whether approved or disapproved, are a matter of record and are maintained on file in Reliability for a period of one year.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VI. INTERVAL ADJUSTMENT AND PROCESS CHANGES

3. COMPONENT OVERHAUL LIMITATION ADJUSTMENTS

A. Adjustments

- (1) Sampling analysis and performance evaluations are conducted by Reliability for the purpose of adjusting component overhaul limits. A minimum of one sample is required for time increases to component overhaul limits.
- (2) Sampling criteria to extend component overhaul limits shall include, but is not limited to, the following analysis and evaluations:
 - (a) Removal rates and performance statistics.
 - (b) Predominant failure mode information.
 - (c) Mean time between removal statistics.
 - (d) Predominant failure findings and trends.
 - (e) Operating environment and equipment utilization.
 - (f) Impact on delays/cancellations and in-flight shutdowns.
- (3) Each sampled component must have been removed from its operating environment and must have been operated within five percent of the currently approved time limitations without a removal resulting in a shop visit for major repair.
- *(4) Majority approval by the designated members of the AVN MRB with affirmation of the Director of Maintenance, AVN-300, is required for all changes to component overhaul limits.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VI. INTERVAL ADJUSTMENT AND PROCESS CHANGES

4. SHORT-TERM ESCALATION

A. Procedures for short-term escalation of maintenance intervals are subject to the following limitations:

- (1) Scheduled maintenance checks - 10% of established days, hours or landings not-to-exceed 500 hours time-in-service.
- (2) Powerplants and powerplant components or accessories - 10% of established calendar time, hours, or cycles not-to-exceed 500 hours time-in-service.
- (3) Airframe components, accessories and appliances - 10% of established calendar time, hours, or cycles not-to-exceed 500 hours time-in-service.

NOTE: An individual item may be escalated to a higher figure by an extended short-term escalation predicated on justification presented to the assigned FAA CHDO inspector (maintenance or avionics, as applicable) and subject to approval before exceeding the current short-term escalation limitation.

B. When escalation of a scheduled maintenance check is approved, the Short-Term Escalation Limitation Intervals will be adjusted accordingly.

C. Prohibitions

- (1) Short-term escalation procedures do not apply to the following:
 - (a) Intervals specified by FAA Airworthiness Directives.
 - (b) Life Limits specified by Type Certificate Data Sheets.
 - (c) Limitations specified by Minimum Equipment Lists or Configuration Deviation Lists for the aircraft involved.
 - (d) Manufacturers Airworthiness Limitations.
 - (e) FAA MRB Limitations.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (f) Requirements of FAR's.
- (g) Structural sample periods imposed by MRB.
- (h) Production Approval Holders/Manufacturers recommended overhaul/maintenance intervals for Safety and Survival Equipment.

Procedures for short-term escalation of operating time limits may be found in the GMM, Chapter III, Section 60.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VI. INTERVAL ADJUSTMENT AND PROCESS CHANGES

5. MAINTENANCE TIME LIMITATIONS

Maintenance Time Limitations are authorized for the aircraft listed in the following table:

AIRCRAFT MAKE/MODEL/SERIES	MANUAL/DOCUMENT NAME AND NUMBER	MANUAL/DOCUMENT DATE
BE-300	BEECHCRAFT 300 WORK CONTENT DOCUMENT TI 4128.1	AS REVISED
LR-60	LEARJET 60 WORK CONTENT DOCUMENT TI 4107.1	AS REVISED
CL-601-3R	CHALLENGER CL-601-3R WORK CONTENT DOCUMENT TI 4109.1	AS REVISED
BAe 125-800A	RAYTHEON BAe 125-800A WORK CONTENT DOCUMENT TI 4125.1	AS REVISED

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VI. INTERVAL ADJUSTMENT AND PROCESS CHANGES

6. PRIMARY MAINTENANCE PROCESSES

A. *Primary Maintenance Processes-MSG (Maintenance Steering Group)-2

- (1) The three primary maintenance processes utilized in the AVN continuous airworthiness maintenance program are HARD-TIME, ON-CONDITION and CONDITION-MONITORED.
- (2) HARD-TIME (HT) is a preventive primary maintenance process that requires an appliance or component be removed from service or periodically overhauled at or before time intervals specified in the applicable AVN Work Content Document.
- (3) ON-CONDITION (OC) is a preventive primary maintenance process that requires that an appliance or component be periodically inspected or checked against some appropriate physical standard to determine whether it can continue in service. The purpose of the standard is to remove the unit from service before failure during normal operation occurs.
- (4) CONDITION-MONITORED (CM) is applied to appliances and components that have neither HT nor OC as their primary maintenance process. CM may not be applied to components whose failure may have a direct adverse effect on operating safety. CM allows failures to occur and relies upon analysis of operating safety and experience to indicate need for corrective action. AVN application of CM includes, but is not limited to, the following:
 - (a) Reviewing trended failure modes and attributed removal causes, analyzing failure findings, tabulating removal statistics and reviewing confirmed and non-confirmed failure categories.
 - (b) Analyzing the effectiveness of applied maintenance and inspection practices and operational policies and procedures.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (c) Evaluating available unit modification upgrades.
- (d) Analyzing adverse impact on dispatch reliability.
- (e) Conducting studies of industry experience.

B. Primary Maintenance Tasks MSG-3

- (1) The MSG-3 maintenance program is task oriented, consisting of eight separate tasks where the most applicable and effective tasks are assigned to components and structural items using a "top down" approach. The "top down" approach requires that maintenance tasks and intervals be assigned based on the consequences of functional failure of the aircraft system and components.
- (2) MSG-3 Tasks
 - (a) Lubrication/Servicing - Any act of lubricating or servicing for the purpose of maintaining inherent design capabilities.
 - (b) Operational Check/Visual Check - A task to determine that an item is accomplishing its intended purpose.
 - (c) Inspection/Functional Check - An examination of an item against a specific standard. It may vary from cleaning or replacement of single parts to a complete overhaul.
 - (d) Restoration - Work (on/off the aircraft) necessary to return the item to a specific standard. It may vary from cleaning or replacement of single parts to a complete overhaul.
 - (e) Discard - To remove from service an item at a specified life limit. Normally applied to single parts. The item must show functional degradation at an identifiable age and most units must survive to that age.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VI. INTERVAL ADJUSTMENT AND PROCESS CHANGES

7. PRIMARY MAINTENANCE PROCESS CHANGES

A. *Primary Maintenance Process Changes-MSG (Maintenance Steering Group)-2

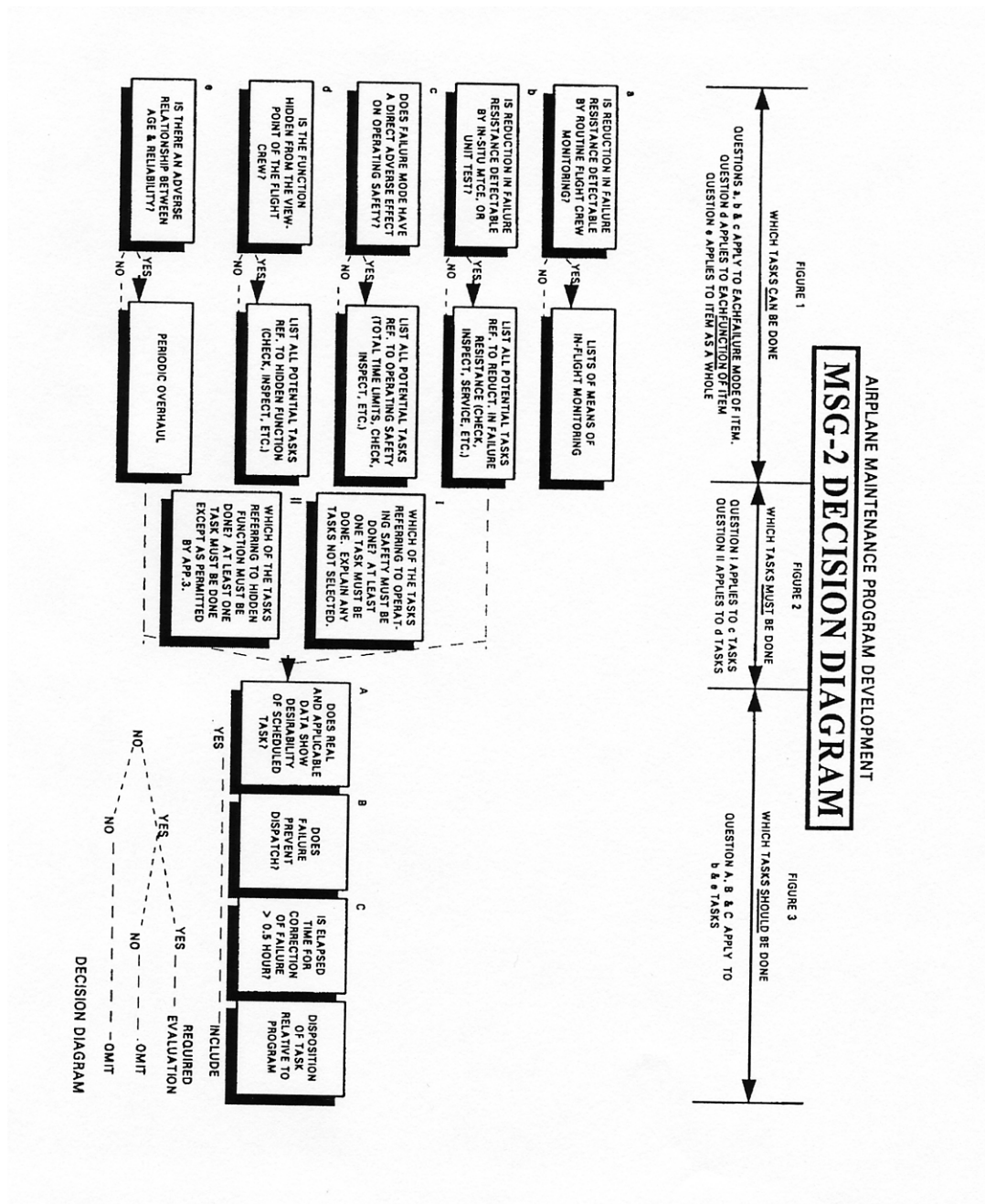
- (1) An appliance or component may be changed from one primary maintenance process to another following extensive analysis by Reliability.
- (2) The Reliability Section shall conduct the analysis of the subject component(s) utilizing logic methods provided in the MSG-2 Decision Diagram provided in this Section.
- (3) The analysis shall be based on the following specific criteria:
 - (a) Analyzing failure detection characteristics.
 - (b) Assessment of failure modes.
 - (c) Assessment of hidden failure modes.
 - (d) Analyzing adverse effect on operating safety.
 - (e) Assessing relationship between age and reliability of the unit.
 - (f) Analyzing operating historical data.
 - (g) Manufacturer and operator statistical/analytical data.
- (4) The Reliability Section shall prepare a MRB Action Form, VN Form 4100-34, (Reference Chapter VIII, Section 2) accompanied by detailed technical and performance data to substantiate the proposal.
- *(5) Majority approval by designated AVN MRB members and affirmation of the Director of Maintenance, AVN-300, is required for all primary maintenance process changes.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

- (6) Upon approval by the AVN MRB, the Supervisor of the Program Standards Section, AVN-328, ensures final revisions to the affected pages of the AVN applicable Work Content Document are prepared and distributed to all manual holders.
- (7) All AVN MRB Action Forms submitted to change primary maintenance processes, whether approved or disapproved, are a matter of record and maintained on file in Reliability.
- (8) The CHDO must approve any primary maintenance process changes.

AVIATION SYSTEM STANDARDS AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION MAINTENANCE RELIABILITY PROGRAM MANUAL

MSG-2 DECISION DIAGRAM



AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VI. INTERVAL ADJUSTMENT AND PROCESS CHANGES

8. *MSG (Maintenance Steering Group)-2 DECISION DIAGRAM

A component is considered to have a "hidden function" if either of the following exists:

1. The component has a function, which is normally active whenever the system is used, but there is no indication to the flight crew when that function ceases to perform.
2. The component has a function, which is normally inactive, and there is no prior indication to the flight crew that the function will not perform when called upon. The demand for active performance will usually follow another failure and the demand may be activated automatically or manually.

Examples of components processing hidden functions exist in a bleed air system. A bleed air temperature controller normally controls the bleed air temperature to a maximum of 400°F. In addition, there is a pylon shutoff valve, which incorporates a secondary temperature control, should the temperature exceed 400°F. A duct overheat switch is set to warn flight crew of temperature above 480°F, in which event they can shut off the air supply from the engine by actuating the pylon shut-off valve switch. There is no duct temperature indicator.

The bleed air temperature controller has a hidden active function of controlling the air temperature. Since there is a secondary temperature control in the pylon valve and since there is no duct temperature indicator, the flight crew has no indication of when the temperature controls function ceases to be performed by the temperature controller. Also, the flight crew has no indication prior to its being called into use that the secondary temperature control function of the pylon valve will perform. Therefore, the pylon valve has a hidden inactive function (manual shutoff) since at no time in normal use does the flight crew have to manually close the valve.

The hidden function definition includes reference to "no indication to the flight crew" of performance of that function. If there are indications to the flight crew, the function is evident (not hidden). However, to qualify as an evident function, these indications must be obvious to the flight crew during their normal duties, without special monitoring (bear in mind, however, that special monitoring is encouraged as a part of the maintenance program to make hidden functions into evident ones).

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

It is recognized that, in the performance of their normal duties, the flight crews operate some systems full time, others once or twice per flight, and others less frequently. All of these duties, providing they are done at some reasonable frequency, qualify as "normal". It means, for example, that although an anti-icing system is not used every flight, it is used with sufficient frequency to qualify as a "normal" duty. Therefore, the anti-icing system can be said to have an evident (not hidden) function from a flight crew's standpoint. On the other hand, certain "emergency" operations which are done at very infrequent periods (less than once per month) such as emergency gear extension, fuel dump actuation, etc., cannot be considered to be sufficiently frequent to warrant classification as evident (not hidden) functions.

The analysis method requires that all hidden functions have some form of scheduled maintenance applied to them. However, in those cases where it may be difficult to check the operation of hidden functions, it is acceptable to assess the operating safety effect of combined function of the hidden function with a second failure that brings the hidden function failure to the attention of the flight crew. In the event the combined failures do not produce a direct adverse effect on operating safety, then the decision whether to apply maintenance to check the pertinent hidden function becomes an economic decision to be considered.

*Note also, that in some cases, it is acceptable to accomplish hidden function checks of removable components during unscheduled shop visits, providing the component has at least one other function which when failed, is known to the flight crew and which causes the unit to be sent to the shop. Also, the hidden function failure mode should have an estimated reliability well in excess of the total reliability of the other functions that are evident to the flight crew.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

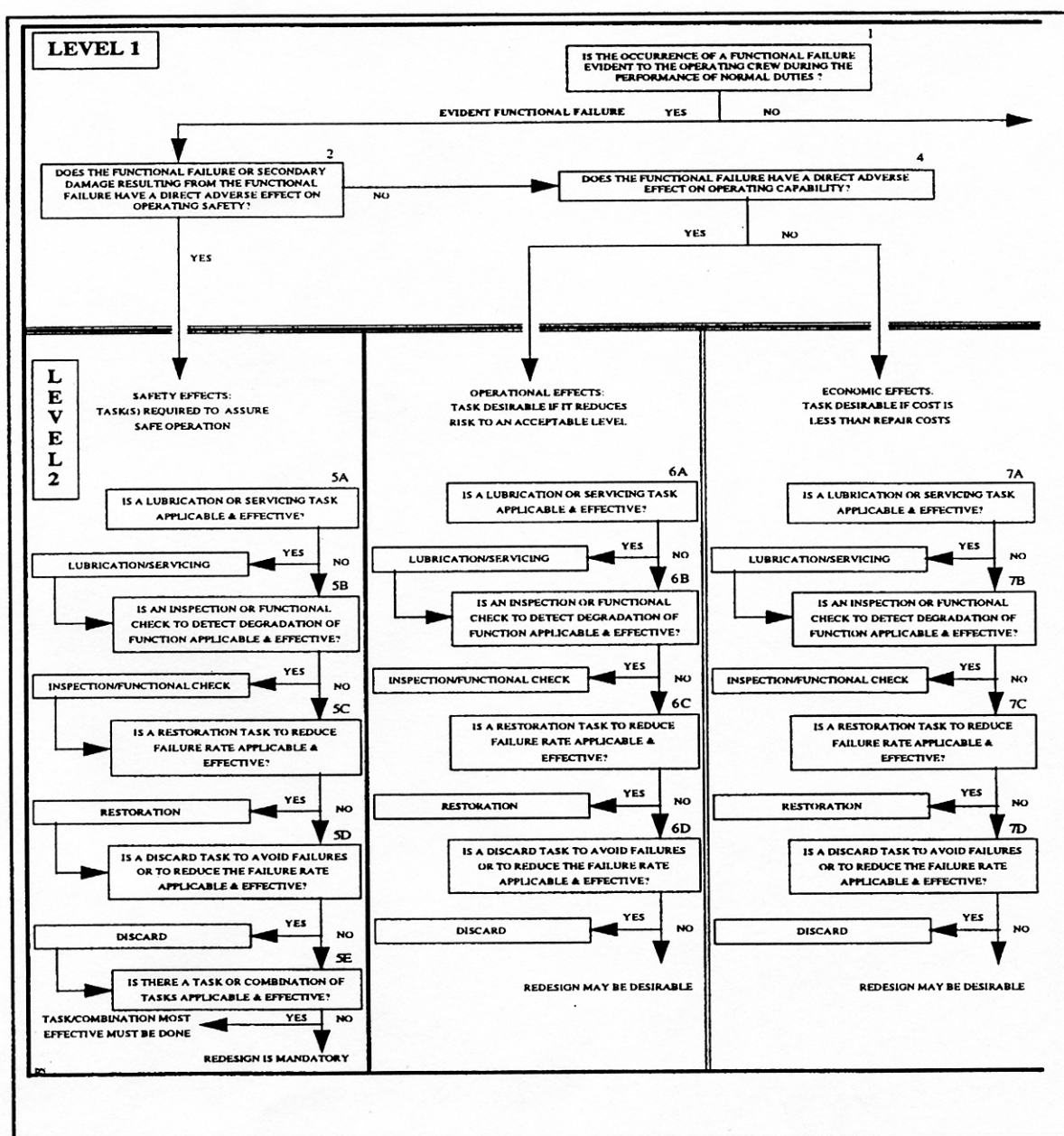
CHAPTER VI. INTERVAL ADJUSTMENT AND PROCESS CHANGES

9. *MSG (Maintenance Steering Group)-3 MAINTENANCE TASK REVISIONS

- A. The effective program tasks and intervals may be revised providing the following criteria are met:
 - (1) Extensive analysis by the Reliability Section that include:
 - (a) History of previous time changes
 - (b) Effect of the change or corrective action programs
 - (c) Engineering analysis and input
 - (d) Sampling tests
 - (e) Component removal rates/Pilot Reports/Non-routine reports
 - (f) Tear-down/shop reports
 - (g) Manufacturers test and recommendations
 - (2) If the component being evaluated is considered to be in one of the following categories, analysis is not required:
 - (a) Evident Operation Effect
 - (b) Evident Economic Effect
 - (c) Hidden Function, Non-Safety Effect
- B. The Reliability Section shall prepare a MRB Action Form, VN Form 4100-34 (reference Chapter VIII, Section 2), accompanied by the data to substantiate the proposal.
- *C. Majority approval by designated AVN MRB members with affirmation of the Director of Maintenance, AVN-300, is required for all interval and task revisions.
- D. Upon approval by the AVN MRB, the revisions will be sent to the Certificate Holding District Office (CHDO) Inspector for final approval.
- E. The Manager of the Quality Assurance Branch ensures that the final revisions to the effected pages of the AVN Applicable Work Content Document are prepared and distributed to all manual holders.

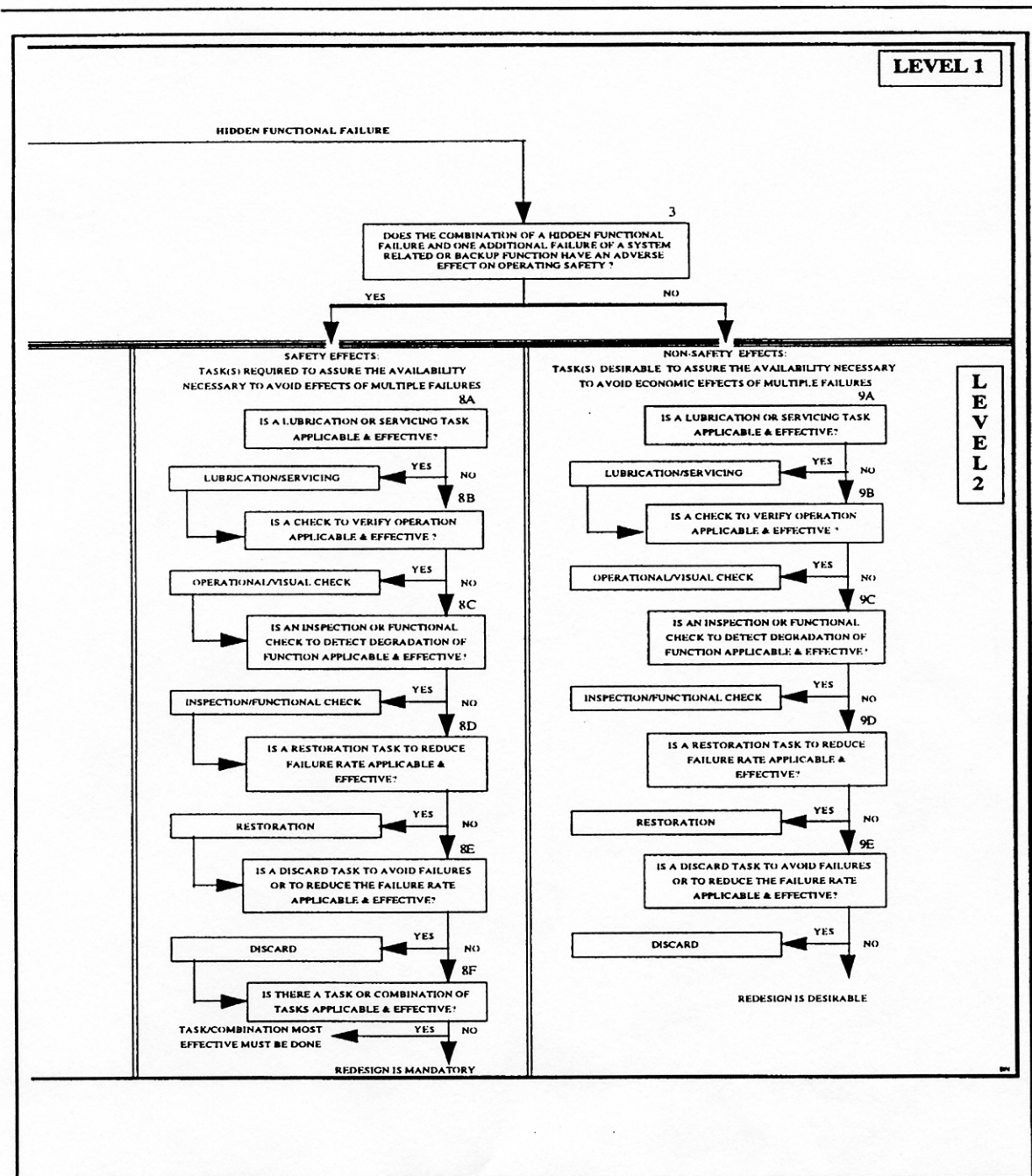
AVIATION SYSTEM STANDARDS AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION MAINTENANCE RELIABILITY PROGRAM MANUAL

MSG-3 DECISION DIAGRAM



AVIATION SYSTEM STANDARDS AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION MAINTENANCE RELIABILITY PROGRAM MANUAL

MSG-3



AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VII. AVIATION MAINTENANCE HUMAN FACTORS PROGRAM

1. PURPOSE AND DESCRIPTION

A. Purpose

The purpose of the AVN Aviation Maintenance Human Factors Program is to identify, educate and apply modern accident prevention fundamentals through systematic processes in an effort to protect people, equipment, property and the environment. This program is designed as an investigative and not a disciplinary process.

B. Description

The program provides an active, on-going prevention/education program that continually reviews the interfaces of man, machine, mission and management. The continual learning process includes the recognition and study of matters surrounding potential and past workplace occurrences, for the purpose of providing a prevention strategy rather than an after the fact review program. The program is not a FAA Regulatory Requirement, but has been incorporated as an enhancement to the AVN Aircraft Reliability Program.

C. Benefits

The program provides the framework for ongoing improvement of the AVN CAMP. It provides the feedback necessary to position the workforce for future growth and improved performance, identifying the elements affecting human performance and their relationship to aircraft maintenance activities.

D. Employee Benefits

The program will produce numerous benefits, including, but not limited to:

- (1) Increased safety
- (2) Error reduction
- (3) Teamwork enhancements
- (4) Positive and assertive communication between all parties
- (5) Maintenance effectiveness

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

*E. Regulatory Responsibility

Implementation and accomplishment of the Aviation Maintenance Human Factors Program does not in any way alleviate Aircraft Maintenance and Engineering Division's responsibilities and requirements for compliance with applicable Federal Aviation Regulations (FAR's). Any instance of apparent noncompliance of the FAR's must be immediately reported to the Director of Maintenance.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VII. AVIATION MAINTENANCE HUMAN FACTORS PROGRAM

2. RESPONSIBILITIES

- A. Manager, Quality Assurance Branch, AVN-320.

Responsible for oversight and management of the AVN Maintenance Human Factors Program.

- B. Program Standards (Reliability) Section, AVN-328

Responsible for the administration of the AVN Maintenance Human Factors Program as follows:

- (1) Error investigation.
- (2) Validation of all investigation results.
- (3) Tracking and analyzing of data.
- (4) Making recommendations to the MRB and ensuring implementation of resultant prevention/intervention strategies.
- (5) Provide results of MRB prevention/intervention strategies to AVN-300 personnel.
- (6) Measurement of program results.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VII. AVIATION MAINTENANCE HUMAN FACTORS PROGRAM

3. ERROR INVESTIGATION

A. ERROR INVESTIGATION PROCESS

- * (1) AVN-328 Reliability Program personnel will review AVN Safety Significant Events (SSE's), VN Form 4040-11, Aeronautical Reliability Reports (ARR's), VN Form 4100-227 and Mechanical Interruption Summary (MIS) Reports. If, based upon this review, AVN-328 determines that a Human Factor Investigation is required, they will initiate a VN Form 4100-82, attach it to the applicable report(s), SSE, ARR or MIS and forward it to the appropriate maintenance activity for completion (i.e.), Approved for Human Factors Investigation or Disapproved and the reason for disapproval. The VN Form 4100-82 will then be signed and returned to AVN-328.

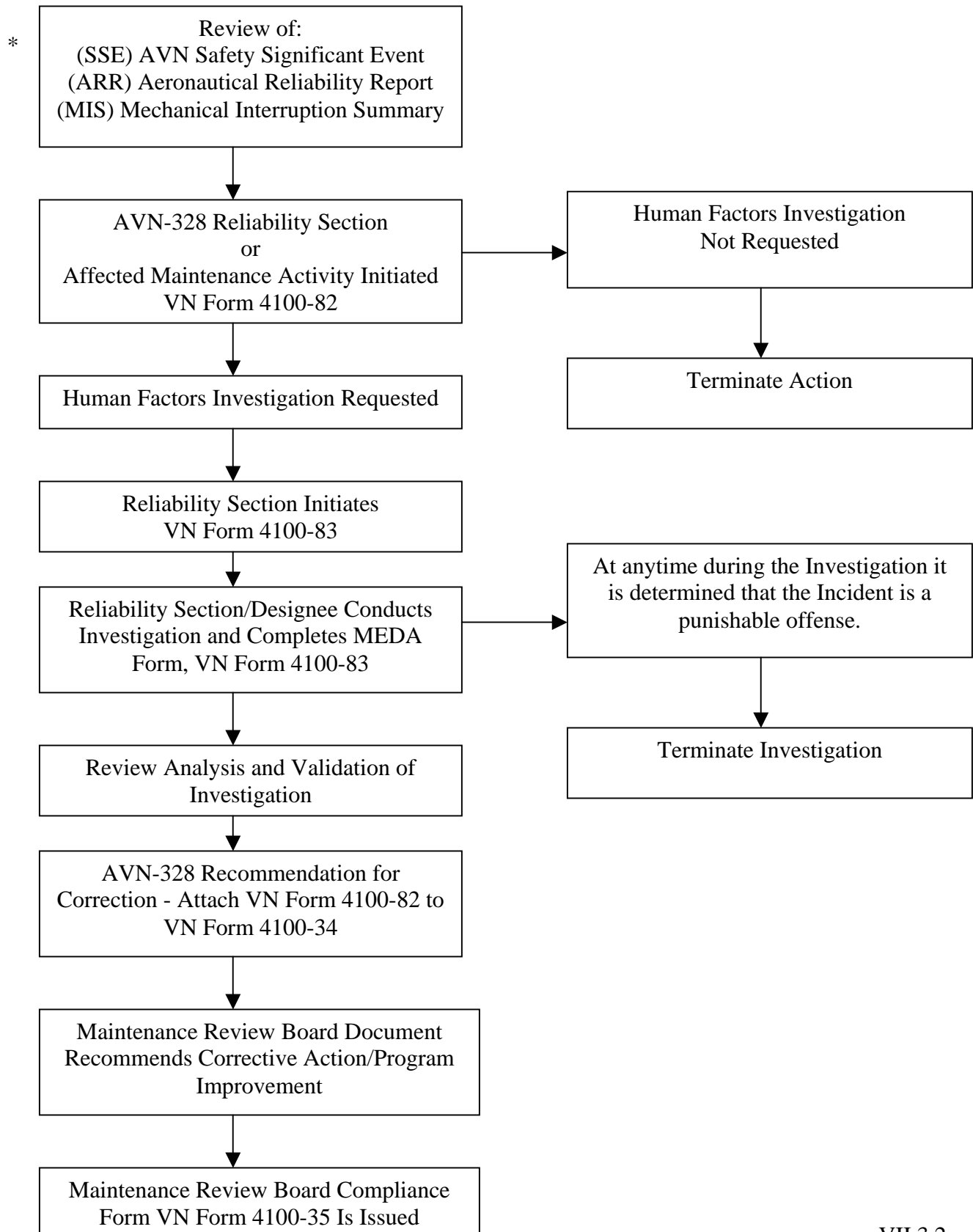
The VN Form 4100-82, with appropriate supporting documentation, may also be initiated and forwarded to AVN-328 by the effected maintenance activity.

When a Human Factors Investigation is requested, AVN-328 will issue a Maintenance Error Decision Aid (MEDA) Results Form, VN Form 4100-83 and assign a tracking number.

- (2) Reliability Section or designee will be responsible for the investigation, completion and accuracy of the MEDA form. In the event a qualified designee is not available, AVN-328 will conduct the investigation. When completed by a designee, the original will be returned to AVN-328, Reliability Section. The MEDA form provides a standardized format for the investigator to consider contributing factors and their relationship to the error.
- (3) Data collection will be formal interviews with subject matter experts and other personnel having information pertinent to the incident. Information will be compiled and analyzed with findings and recommendations submitted to the Maintenance Review Board (MRB) on Maintenance Review Board (MRB) Action Form, VN Form 4100-34.
- (4) The MRB will determine the appropriate course of action, document recommendations/information and forward MRB Compliance Form, VN Form 4100-35, to the appropriate Branch for action.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

ERROR INVESTIGATION FLOW CHART



AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VII. AVIATION MAINTENANCE HUMAN FACTORS PROGRAM

4. VALIDATION OF INVESTIGATION RESULTS

A. Validation Process Procedures

- (1) The Program Standards (Reliability) Section will:
 - (a) Review and validate all data collected during the investigation.
 - (b) Determine if human factors contributed to the error.
 - (c) Confirm the findings to determine the scope and severity of the error.

B. Data Analysis Process

- (1) Reliability Section, or its designee, shall conduct the analysis. The analysis process includes, but is not limited to, the following:
 - (a) Needed changes in maintenance practices.
 - (b) Needed changes in program procedures.
 - (c) Needed changes in organization or process.
- (2) The Reliability Section will:
 - (a) Determine the need for error prevention/intervention.
 - (b) Recommend prevention/intervention strategies to MRB.
 - (c) Accomplish follow-up review of MRB actions to determine their effectiveness.
- (3) The Reliability Section will establish and maintain a database, tracking contributing factor categories, monitor and analyze the data for trend detection.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VII. AVIATION MAINTENANCE HUMAN FACTORS PROGRAM

5. IMPLEMENTATION OF PREVENTION/INTERVENTION STRATEGIES

- *A. The Reliability Section lists recommendations for error prevention/intervention strategies on the MEDA Form, VN Form 4100-83, Reference Chapter VIII, Section 2. These recommendations are presented to the AVN MRB in accordance with Chapter II of this Manual.
- B. The AVN MRB formally evaluates the recommendations for significance, priority, cost effectiveness, and establishes appropriate prevention/intervention strategies as warranted.
- C. The Reliability Section is responsible to ensure the prevention/intervention strategies are implemented.
- *D. Results of each Human Factors Investigation will be listed in the Report Section as they are available on the AVN-300 web site,
"http://avn.faa.gov/index.asp?xml=fimo/eml"..
- E. Results of all Human Factors Investigations will be identified in each appropriate Quarterly Reliability Report with a summary in the fourth quarter report.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VII. AVIATION MAINTENANCE HUMAN FACTORS PROGRAM

6. PROGRAM MEASUREMENT

- A. As prevention/intervention strategy actions are completed, the processes for measuring program effectiveness will be based on a pre-implementation baseline and current data comparison.
- B. Measurement data will be acquired and tracked by the Reliability Section.
- C. The Program Standards (Reliability) Section will monitor performance to determine if the actions implemented are effective in correcting the specific problems.

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VIII. DATA DISPLAY AND REPORTS

1. FLEET RELIABILITY REPORT

A. Fleet Reliability Report

- (1) The Program Standards (Reliability Section), AVN-328, is responsible for ensuring that all pertinent performance data relative to the Reliability Program is collected, processed, audited and analyzed for preparation of the Reliability Report.
- (2) The Reliability Report is a quarterly publication prepared by the Reliability Analyst describing the previous quarter's fleet performance and reliability accomplishments.
- * (3) The Reliability Report will be posted for review on the AVN-300 web site "<http://avn.faa.gov/index.asp?xml=fimo/eml>" after the scheduled quarterly meeting.
- (4) The Reliability Report provides specific performance data and performance accomplishments of the AVN aircraft fleet, including performance statistics and graphs relative to the following:
 - (a) Aircraft/Engine and Propeller Utilization
 - (b) Unscheduled Engine and Propeller Removals
 - (c) Engine Shutdowns
 - * (d) Dispatch Reliability
 - (e) Pilot Reports
 - (f) Non-Routine Work Forms

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

CHAPTER VIII. DATA DISPLAY AND REPORTS

2. RELIABILITY AFFILIATED FORMS, REPORTS AND DOCUMENTS


Samples of various forms, reports, etc., pertaining to the reliability data collection, data analysis and data reporting processes are displayed on the following pages of this chapter.

The samples consist of the following:

<u>Form and Number</u>	<u>Title</u>	<u>Page</u>
*VN Form 4040-11	AVN Safety Significant Event	VIII.2.21
VN Form 4100-5-2	Engineering Order Part B-1	VIII.2.2
VN Form 4100-8	Aircraft Log	VIII.2.3
VN Form 4100-9	EPTM/SI Maintenance Recommendation	VIII.2.4
VN Form 4100-34	Maintenance Review Board (MRB) Action	VIII.2.5
VN Form 4100-35	Maintenance Review Board Compliance Form (MRBCF)	VIII.2.6
VN Form 4100-37	Unscheduled Engine/Propeller Removal Report	VIII.2.7
VN Form 4100-69	Maintenance Alert Directive	VIII.2.8
VN Form 4100-82	Human Factors Investigation Request Form, VN Form 4100-82	VIII.2.9
VN Form 4100-83	Maintenance Error Decision Aid (MEDA) Results Form, VN Form 4100-83	VIII.2.10-.13
VN Form 4100-136	Maintenance Analysis Bulletin	VIII.2.14
VN Form 4100-155	Non Routine Work	VIII.2.15
VN Form 4100-227	Aeronautical Reliability Report	VIII.2.16
Unnumbered	Aircraft Mechanical Interruption Summary	VIII.2.17-.18
FICO Form 001	Dispatch Deviation	VIII.2.19
FICO Form 006	Proposed Flight Schedule	VIII.2.20
*		
FAA Form 8070-1	Service Difficulty Report	VIII.2.22-.23

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

***FIGURE 1: ENGINEERING ORDER, PART B-1, VN FORM 4100-5-2**

	<h2 style="margin: 0;">ENGINEERING ORDER</h2> <h3 style="margin: 0;">PART B-1</h3>	EO No. (3) REV. (4) DATE (5)		
APPROVAL (1) _____ MANAGER, AVN-300 DATE _____	MODIFICATION (2) AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION OFFICE OF AVIATION SYSTEM STANDARDS, FAA/DOT OKLAHOMA CITY, OK	PAGE 1 of _____ ATA (6)		
TITLE (7)				
EFFECTIVITY (8)				
REFERENCES (9)				
PROJECT ENGR (10)	FAR CLASS. (21.93) (12)			
DESIGN ENGR (11)	STC No. (13)			
TI MANUAL (14)	PROJECT No. (15)			
ASSOCIATED REQUIREMENTS (16)				
<input type="checkbox"/> Flight Manual Rev. <input type="checkbox"/> Company Flt. Man. Rev. <input type="checkbox"/> F.I. Manual Rev. <input type="checkbox"/> Min. Equip. List Rev. <input type="checkbox"/> Cockpit Checklist	<input type="checkbox"/> Flight Test <input type="checkbox"/> Electrical Load Rev. <input type="checkbox"/> Maint. Manual Rev. <input type="checkbox"/> Maintenance Plan <input type="checkbox"/> Maintenance Training	<input type="checkbox"/> Operator Training <input type="checkbox"/> Capital Value Change <input type="checkbox"/> MRL <input type="checkbox"/> Project Test Equip. <input type="checkbox"/> Aircraft Equip. List		
<input type="checkbox"/> Inspection System <input type="checkbox"/> Spares Affected <input type="checkbox"/> Weight & Balance <input type="checkbox"/> Interdependent EO <input type="checkbox"/> Compliance Reporting				
REVISION LOG (17)				
Rev.	Date	Init.	Description	LEP
-			Original.	All

VN Form 4100-5-2-MOD (5/03)

08/22/03

TI 4100.25
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AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

AIRCRAFT LOG, VN FORM 4100-8

AIRCRAFT LOG		DATE (1)		BASE (2)		N (3)		PAGE 018052		
CREW		FLIGHT CODE	STATION SYMBOL	FLIGHT TIME	TIME IN SERVICE	AIRCRAFT TOTALS	HOURS	LANDINGS	ENG/CYC #1	
PIC		(5)	(6)	IN (7)	ON (8)	BROUGHT FORWARD			ENG/CYC #2	
SIC (4)				OUT	OFF					
Tech		ELAPSED TIME → (13)				THIS PAGE	(13)	(14)	(15)	
ADD P/Tech		MATGW (9)	ENG/CYC CREDITED ↓	LANDINGS CREDITED ↓		TOTAL FORWARD			(16)	
PILOTS ACCEPTANCE (10)			(11)	(12)						
CREW		FLIGHT CODE	STATION SYMBOL	FLIGHT TIME	TIME IN SERVICE	NEXT INSP DUE	(17)			
PIC				IN	ON	DATE	TYPE			
SIC				OUT	OFF					
Tech		ELAPSED TIME →				AIRWORTHINESS RELEASE (18)				
ADD P/Tech		MATGW (9)	ENG/CYC CREDITED ↓	LANDINGS CREDITED ↓		DATE				
PILOTS ACCEPTANCE						FUEL ADDED Line/gal/lt	TOTAL FUEL	REFUEL BASE	OIL ADDED 1 2	
ENGINE CONDITION TREND MONITORING DATA										
NO	PROP RPM	TORQUE	WF	ITT	N1	N2				
1				(19)			PRES4	(20)	(21)	
2							ALT			
1 DISCREPANCY:						1 CORRECTIVE ACTION		MEL# (24)		
(22)						(23)				
ENTERED BY:						SIGN, & DATE			R.I.I. (25)	
2 DISCREPANCY:						2 CORRECTIVE ACTION		MEL# (24)		
(22)						(23)				
ENTERED BY:						SIGN, & DATE			R.I.I. (25)	
(26)						PARTS REPLACEMENT INFORMATION				
POS NO.		PART NO.		SERIAL NO.		POS NO.		SERIAL NO.		
OFF						OFF				
ON						ON				

VN Form 4100-8

08/22/03

 TI 4100.25
 CHANGE: 07

AVIATION SYSTEM STANDARDS
 AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
 MAINTENANCE RELIABILITY PROGRAM MANUAL

EPTM/SI MAINTENANCE RECOMMENDATION, VN FORM 4100-9

EPTM/SI MAINTENANCE RECOMMENDATION					
Subject	Date of Recommendation		Tracking Number		
To:	Type Aircraft/Engine		N No.		Acrft. Hrs
	Engine S/N	TSO	TSN	Eng Pos.	Eng Hrs.
	Name of Originator				
	Title			Routing Symbol	
Recommendation(s)					
Reply					
Return To:		Reply Requested NLT		Date of Reply	
		Signature			
		Organization		Routing Symbol	

VN Form 4100-9

(09/00)

Electronic Version

08/22/03

TI 4100.25
CHANGE: 07

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

***MAINTENANCE REVIEW BOARD (MRB) ACTION, VN FORM 4100-34**

MRB No. _____					
<u>MAINTENANCE REVIEW BOARD (MRB) ACTION</u>					
In accordance with TI 4100.24, the following is submitted for MRB review/action. Choose one of the following categories listed below which fits the appropriate action.					
<input type="checkbox"/>	1. Change maintenance inspection program, interval, maintenance process, and/or work content specification and areas of concern.				
<input type="checkbox"/>	2. Modifications/alterations.				
<input type="checkbox"/>	3. Incorporate AD(s)/Service Bulletin(s).				
<input type="checkbox"/>	4. On Condition/hard time/overhaul times or limit and repair frequency.				
<input type="checkbox"/>	5. Other.				
<u>REQUESTED BY:</u> _____					
<u>SUBJECT:</u> _____					

<u>DISCUSSION:</u> _____					

<u>RESULT OF ANALYSIS:</u> _____					

<u>FOLLOW-UP ACTION:</u> _____					

	<u>CONCUR</u>	<u>NON-CONCUR</u>	<u>DATE</u>	<u>COMMENTS PROVIDED</u>	
				Yes	No
Chairperson, Div. Mgr./Dir. of Maint., AVN-300	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
Co-Chairperson, Asst. Div. Mgr., AVN-301	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
Member, Mgr., Line Station Br., AVN-310	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
Member, Mgr., Qlty. Assur. Br., AVN-320	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
Member, Mgr., Base Maint. Br., AVN-330	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
Member, Mgr., Engineering Br., AVN-340	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
Prepared by: _____		Date: _____		*Comments must be documented and attached to MRB form	
VN Form 4100-34		(03/03)		Electronic Version	

08/22/03

TI 4100.25
CHANGE: 07

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

***MAINTENANCE REVIEW BOARD COMPLIANCE FORM (MRBCF), VN FORM 4100-35**

MRB NO: _____

MAINTENANCE REVIEW BOARD COMPLIANCE FORM (MRBCF)

SUBJECT:

ACTION TO BE ACCOMPLISHED:

Please complete the required action and forward this form to the next branch for further action.

COMPLETED ACTION:

<input type="checkbox"/> AVN-310 SIGNATURE	_____	DATE	_____
<input type="checkbox"/> AVN-320 SIGNATURE	_____	DATE	_____
<input type="checkbox"/> AVN-328 SIGNATURE	_____	DATE	_____
<input type="checkbox"/> AVN-330 SIGNATURE	_____	DATE	_____
<input type="checkbox"/> AVN-340 SIGNATURE	_____	DATE	_____
<input type="checkbox"/> OTHER SIGNATURE	_____	DATE	_____

COMMENTS:

RETURN THIS FORM TO AVN-320 BY (insert projected date).

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CHANGE: 07

UNSCHEDULED ENGINE/PROPELLER REMOVAL REPORT, VN FORM 4100-37[illegible]

08/22/03

TI 4100.25
CHANGE: 07

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

MAINTENANCE ALERT DIRECTIVE, VN FORM 4100-69

MAINTENANCE ALERT DIRECTIVE

Page 1

MAD Number:

Date:

To:

1. **SUBJECT:**

2. **GENERAL:**

3. **ACTION REQUIRED:**

4. **COMPLIANCE:**

5. **CANCELLATION:**

08/22/03

TI 4100.25
CHANGE: 07

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

HUMAN FACTORS INVESTIGATION REQUEST FORM, VN FORM 4100-82

Human Factors Investigation (HFI) Request Form

To: Routing Symbol:		From: Routing Symbol:		
Location of Occurrence:	Hangar, In Flight, Etc.	Date of Occurrence:	Aircraft Type:	N-Number:
Description of Occurrence:				
Information obtained during a Human Factors Investigation shall not be used for disciplinary action. <input type="checkbox"/> APPROVED FOR HUMAN FACTORS INVESTIGATION. <input type="checkbox"/> DISAPPROVED REASON FOR DISAPPROVAL:				
<i>Typed Name Will Substitute For Signature When Sending Electronically</i> Signature:				RETURN TO AVN-328 Date:

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

MAINTENANCE ERROR DECISION AID (MEDA) RESULTS FORM,
VN FORM 4100-83 (Page 1)

Maintenance Error Decision Aid (MEDA) Results Form

Section I -- General Information	
Reference #: _____ Operator: _____ Station of Error: _____ Aircraft Type: _____ Engine Type: _____ Registration Number: _____ Serial Number: _____ ATA #: _____ Aircraft Zone: _____ Ref. # of previous related event: _____	Interviewer's Name: _____ Interviewer's Telephone #: _____ Date of Investigation: _____ Date of Event: _____ Time of Event: _____ AM <input type="checkbox"/> PM <input type="checkbox"/> Shift of Error: _____ Type of Maintenance (Check): <input type="checkbox"/> 1. Line—If Line, what type? _____ <input type="checkbox"/> 2. Base—If Base, what type? _____ Date Changes Implemented: _____
Section II -- Event	
Please select the event (check all that apply) 1. Operations Process Event <input type="checkbox"/> a. Flight Delay (write in length) __ day(s) __ hrs __ min. <input type="checkbox"/> b. Flight cancellation <input type="checkbox"/> c. Gate Return <input type="checkbox"/> d. In-flight Shut Down <input type="checkbox"/> e. Air Turn-Back <input type="checkbox"/> f. Diversion <input type="checkbox"/> g. Other (explain below) _____ 2. Aircraft Damage Event <input type="checkbox"/> 3. Personal Injury Event <input type="checkbox"/> 4. Rework <input type="checkbox"/> Other Event (explain below) _____	
Describe the incident/degradation/failure (e.g., could not pressurize) that caused the event. 	
Section III -- Maintenance Error	
Please select the maintenance error(s) that caused the event: <div style="display: flex; flex-wrap: wrap;"> <div style="width: 33%;"> 1. Installation Error <input type="checkbox"/> a. Equipment/part not installed <input type="checkbox"/> b. Wrong equipment/part installed <input type="checkbox"/> c. Wrong orientation <input type="checkbox"/> d. Improper location <input type="checkbox"/> e. Incomplete installation <input type="checkbox"/> f. Extra parts installed <input type="checkbox"/> g. Access not closed <input type="checkbox"/> h. System/equipment not reactivated/deactivated <input type="checkbox"/> i. Damaged on installation <input type="checkbox"/> j. Cross connection <input type="checkbox"/> k. Other (explain below) _____ </div> <div style="width: 33%;"> 3. Repair Error (e.g., component or structural repair) <input type="checkbox"/> a. Did not detect fault <input type="checkbox"/> b. Not found by fault isolation <input type="checkbox"/> c. Not found by operational/functional test <input type="checkbox"/> d. Not found by inspection <input type="checkbox"/> e. Access not closed <input type="checkbox"/> f. System/equipment not deactivated/reactivated <input type="checkbox"/> g. Other (explain below) _____ </div> <div style="width: 33%;"> 6. Airplane/Equipment Damage Error <input type="checkbox"/> a. Tools/equipment used improperly <input type="checkbox"/> b. Defective tools/equipment used <input type="checkbox"/> c. Struck by/against <input type="checkbox"/> d. Pulled/pushed/drove into <input type="checkbox"/> e. Other (explain below) _____ </div> </div> <div style="display: flex; flex-wrap: wrap;"> <div style="width: 33%;"> 2. Servicing Error <input type="checkbox"/> a. Not enough fluid <input type="checkbox"/> b. Too much fluid <input type="checkbox"/> c. Wrong type fluid <input type="checkbox"/> d. Required servicing not performed <input type="checkbox"/> e. Access not closed <input type="checkbox"/> f. System/equipment not reactivated/deactivated <input type="checkbox"/> g. Other (explain below) _____ </div> <div style="width: 33%;"> 5. Foreign Object Damage Error <input type="checkbox"/> a. Material left in aircraft/engine <input type="checkbox"/> b. Debris on ramp <input type="checkbox"/> c. Debris falling into open systems <input type="checkbox"/> d. Other (explain below) _____ </div> <div style="width: 33%;"> 7. Personal Injury Error <input type="checkbox"/> a. Slip/trip/fall <input type="checkbox"/> b. Caught in/on/between <input type="checkbox"/> c. Struck by/against <input type="checkbox"/> d. Hazard contacted (e.g., electricity, hot, cold or sharp surfaces) <input type="checkbox"/> e. Hazardous substance exposure (e.g., toxic or noxious substances) <input type="checkbox"/> f. Hazardous thermal environment exposure (heat, cold, or humidity) <input type="checkbox"/> g. Other (explain below) _____ </div> </div> <div style="width: 33%;"> 8. Other (explain below) _____ </div>	
Describe the specific maintenance error (e.g., auto pressure controller installed in wrong position). 	

AVIATION SYSTEM STANDARDS AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION MAINTENANCE RELIABILITY PROGRAM MANUAL

MAINTENANCE ERROR DECISION AID (MEDA) RESULTS FORM, VN FORM 4100-83 (Page 2)

Section IV – Contributing Factors Checklist	
N/A <input type="checkbox"/>	A. Information (e.g., work cards, maintenance manuals, service bulletins, maintenance tips, non-routines, IPC, etc.) <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <input type="checkbox"/> 1. Not understandable <input type="checkbox"/> 2. Unavailable/inaccessible <input type="checkbox"/> 3. Incorrect <input type="checkbox"/> 4. Too much/conflicting information </div> <div style="width: 48%;"> <input type="checkbox"/> 5. Update process is too long/complicated <input type="checkbox"/> 6. Incorrectly modified manufacturer's MM/SB <input type="checkbox"/> 7. Information not used <input type="checkbox"/> 8. Other (explain below) </div> </div> <p>Describe specifically how the selected information factor(s) contributed to the error.</p>
N/A <input type="checkbox"/>	B. Equipment/Tools/Safety Equipment <div style="display: flex; justify-content: space-between;"> <div style="width: 33%;"> <input type="checkbox"/> 1. Unsafe <input type="checkbox"/> 2. Unreliable <input type="checkbox"/> 3. Layout of controls or displays <input type="checkbox"/> 4. Mis-calibrated <input type="checkbox"/> 5. Unavailable </div> <div style="width: 33%;"> <input type="checkbox"/> 6. Inappropriate for the task <input type="checkbox"/> 7. Cannot use in intended environment <input type="checkbox"/> 8. No instructions <input type="checkbox"/> 9. Too complicated <input type="checkbox"/> 10. Incorrectly labeled </div> <div style="width: 33%;"> <input type="checkbox"/> 11. Not used <input type="checkbox"/> 12. Incorrectly used <input type="checkbox"/> 13. Other (explain below) </div> </div> <p>Describe specifically how the selected <u>equipment/tool</u> factor(s) contributed to the error.</p>
N/A <input type="checkbox"/>	C. Aircraft Design/Configuration/Parts <div style="display: flex; justify-content: space-between;"> <div style="width: 33%;"> <input type="checkbox"/> 1. Complex <input type="checkbox"/> 2. Inaccessible <input type="checkbox"/> 3. Aircraft configuration variability </div> <div style="width: 33%;"> <input type="checkbox"/> 4. Parts unavailable <input type="checkbox"/> 5. Parts incorrectly labeled </div> <div style="width: 33%;"> <input type="checkbox"/> 6. Easy to install incorrectly <input type="checkbox"/> 7. Other (explain below) </div> </div> <p>Describe specifically how the selected aircraft <u>design/configuration/parts</u> factor(s) contributed to error.</p>
N/A <input type="checkbox"/>	D. Job/Task <div style="display: flex; justify-content: space-between;"> <div style="width: 33%;"> <input type="checkbox"/> 1. Repetitive/monotonous <input type="checkbox"/> 2. Complex/confusing </div> <div style="width: 33%;"> <input type="checkbox"/> 3. New task or task change <input type="checkbox"/> 4. Different from other similar tasks </div> <div style="width: 33%;"> <input type="checkbox"/> 5. Other (explain below) </div> </div> <p>Describe specifically how the selected <u>job/task</u> factor(s) contributed to the error.</p>
N/A <input type="checkbox"/>	E. Technical Knowledge/Skills <div style="display: flex; justify-content: space-between;"> <div style="width: 33%;"> <input type="checkbox"/> 1. Skills <input type="checkbox"/> 2. Task knowledge </div> <div style="width: 33%;"> <input type="checkbox"/> 3. Task planning <input type="checkbox"/> 4. Airline process knowledge </div> <div style="width: 33%;"> <input type="checkbox"/> 5. Aircraft system knowledge <input type="checkbox"/> 6. Other (explain below) </div> </div> <p>Describe specifically how the selected <u>technical knowledge/skills</u> factor(s) contributed to the error.</p>

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

MAINTENANCE ERROR DECISION AID (MEDA) RESULTS FORM,
VN FORM 4100-83 (Page
3)

N/A <input type="checkbox"/>	<p>F. Individual Factors</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> 1. Physical health (including hearing and sight)</td> <td><input type="checkbox"/> 6. Body size/strength</td> </tr> <tr> <td><input type="checkbox"/> 2. Fatigue</td> <td><input type="checkbox"/> 7. Personal event (e.g., family problem, car accident)</td> </tr> <tr> <td><input type="checkbox"/> 3. Time constraints</td> <td><input type="checkbox"/> 8. Workplace distractions/interruptions during task performance</td> </tr> <tr> <td><input type="checkbox"/> 4. Peer pressure</td> <td><input type="checkbox"/> 9. Other (explain below)</td> </tr> <tr> <td><input type="checkbox"/> 5. Complacency</td> <td></td> </tr> </table> <p>Describe specifically how the selected <u>factors affecting individual performance</u> contributed to the error.</p>	<input type="checkbox"/> 1. Physical health (including hearing and sight)	<input type="checkbox"/> 6. Body size/strength	<input type="checkbox"/> 2. Fatigue	<input type="checkbox"/> 7. Personal event (e.g., family problem, car accident)	<input type="checkbox"/> 3. Time constraints	<input type="checkbox"/> 8. Workplace distractions/interruptions during task performance	<input type="checkbox"/> 4. Peer pressure	<input type="checkbox"/> 9. Other (explain below)	<input type="checkbox"/> 5. Complacency							
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<input type="checkbox"/> 4. Peer pressure	<input type="checkbox"/> 9. Other (explain below)																
<input type="checkbox"/> 5. Complacency																	
N/A <input type="checkbox"/>	<p>G. Environmental/Facilities</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> 1. High noise levels</td> <td><input type="checkbox"/> 5. Rain</td> <td><input type="checkbox"/> 9. Vibrations</td> <td><input type="checkbox"/> 13. Inadequate ventilation</td> </tr> <tr> <td><input type="checkbox"/> 2. Hot</td> <td><input type="checkbox"/> 6. Snow</td> <td><input type="checkbox"/> 10. Cleanliness</td> <td><input type="checkbox"/> 14. Other (explain below)</td> </tr> <tr> <td><input type="checkbox"/> 3. Cold</td> <td><input type="checkbox"/> 7. Lighting</td> <td><input type="checkbox"/> 11. Hazardous/toxic substances</td> <td></td> </tr> <tr> <td><input type="checkbox"/> 4. Humidity</td> <td><input type="checkbox"/> 8. Wind</td> <td><input type="checkbox"/> 12. Power sources</td> <td></td> </tr> </table> <p>Describe specifically how the selected <u>environment/facilities</u> factor(s) contributed to the error.</p>	<input type="checkbox"/> 1. High noise levels	<input type="checkbox"/> 5. Rain	<input type="checkbox"/> 9. Vibrations	<input type="checkbox"/> 13. Inadequate ventilation	<input type="checkbox"/> 2. Hot	<input type="checkbox"/> 6. Snow	<input type="checkbox"/> 10. Cleanliness	<input type="checkbox"/> 14. Other (explain below)	<input type="checkbox"/> 3. Cold	<input type="checkbox"/> 7. Lighting	<input type="checkbox"/> 11. Hazardous/toxic substances		<input type="checkbox"/> 4. Humidity	<input type="checkbox"/> 8. Wind	<input type="checkbox"/> 12. Power sources	
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N/A <input type="checkbox"/>	<p>H. Organizational Factors</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> 1. Quality of support from technical organizations (e.g., engineering, planning, technical pubs)</td> <td><input type="checkbox"/> 6. Work process/procedure</td> </tr> <tr> <td><input type="checkbox"/> 2. Company policies</td> <td><input type="checkbox"/> 7. Work process/procedure not followed</td> </tr> <tr> <td><input type="checkbox"/> 3. Not enough staff</td> <td><input type="checkbox"/> 8. Work process/procedure not documented</td> </tr> <tr> <td><input type="checkbox"/> 4. Corporate change/restructuring</td> <td><input type="checkbox"/> 9. Work group normal practice (norm)</td> </tr> <tr> <td><input type="checkbox"/> 5. Union action</td> <td><input type="checkbox"/> 10. Other (explain below)</td> </tr> </table> <p>Describe specifically how the selected <u>organizational factor(s)</u> contributed to the error.</p>	<input type="checkbox"/> 1. Quality of support from technical organizations (e.g., engineering, planning, technical pubs)	<input type="checkbox"/> 6. Work process/procedure	<input type="checkbox"/> 2. Company policies	<input type="checkbox"/> 7. Work process/procedure not followed	<input type="checkbox"/> 3. Not enough staff	<input type="checkbox"/> 8. Work process/procedure not documented	<input type="checkbox"/> 4. Corporate change/restructuring	<input type="checkbox"/> 9. Work group normal practice (norm)	<input type="checkbox"/> 5. Union action	<input type="checkbox"/> 10. Other (explain below)						
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<input type="checkbox"/> 5. Union action	<input type="checkbox"/> 10. Other (explain below)																
N/A <input type="checkbox"/>	<p>I. Leadership/Supervision</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> 1. Planning/organization of tasks</td> <td><input type="checkbox"/> 3. Delegation/assignment of task</td> <td><input type="checkbox"/> 5. Amount of supervision</td> </tr> <tr> <td><input type="checkbox"/> 2. Prioritization of work</td> <td><input type="checkbox"/> 4. Unrealistic attitude/expectations</td> <td><input type="checkbox"/> 6. Other (explain below)</td> </tr> </table> <p>Describe specifically how the selected <u>leadership/supervision</u> factor(s) contributed to the error.</p>	<input type="checkbox"/> 1. Planning/organization of tasks	<input type="checkbox"/> 3. Delegation/assignment of task	<input type="checkbox"/> 5. Amount of supervision	<input type="checkbox"/> 2. Prioritization of work	<input type="checkbox"/> 4. Unrealistic attitude/expectations	<input type="checkbox"/> 6. Other (explain below)										
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<input type="checkbox"/> 2. Prioritization of work	<input type="checkbox"/> 4. Unrealistic attitude/expectations	<input type="checkbox"/> 6. Other (explain below)															
N/A <input type="checkbox"/>	<p>J. Communication</p> <table style="width: 100%;"> <tr> <td><input type="checkbox"/> 1. Between departments</td> <td><input type="checkbox"/> 4. Between maintenance crew and lead</td> <td><input type="checkbox"/> 7. Other (explain below)</td> </tr> <tr> <td><input type="checkbox"/> 2. Between mechanics</td> <td><input type="checkbox"/> 5. Between lead and management</td> <td></td> </tr> <tr> <td><input type="checkbox"/> 3. Between shifts</td> <td><input type="checkbox"/> 6. Between flight crew and maintenance</td> <td></td> </tr> </table> <p>Describe specifically how the selected <u>communication</u> factor(s) contributed to the error.</p>	<input type="checkbox"/> 1. Between departments	<input type="checkbox"/> 4. Between maintenance crew and lead	<input type="checkbox"/> 7. Other (explain below)	<input type="checkbox"/> 2. Between mechanics	<input type="checkbox"/> 5. Between lead and management		<input type="checkbox"/> 3. Between shifts	<input type="checkbox"/> 6. Between flight crew and maintenance								
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<input type="checkbox"/> 2. Between mechanics	<input type="checkbox"/> 5. Between lead and management																
<input type="checkbox"/> 3. Between shifts	<input type="checkbox"/> 6. Between flight crew and maintenance																
N/A <input type="checkbox"/>	<p>K. Other Contributing Factors (explain below)</p> <p>Describe how this <u>other factor</u> contributed to the error.</p>																

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

**MAINTENANCE ERROR DECISION AID (MEDA) RESULTS FORM,
VN FORM 4100-83 (Page 4)**

Section V – Error Prevention Strategies		
A. What current existing procedures, processes, and/or policies in your organization are intended to prevent the incident, but didn't ?		
<input type="checkbox"/> Maintenance Policies, or Processes (specify) _____ <input type="checkbox"/> Inspection or Functional Check (specify) _____		
Required Maintenance Documentation <input type="checkbox"/> Maintenance Manuals (specify) _____ <input type="checkbox"/> Logbooks (specify) _____ <input type="checkbox"/> Work cards (specify) _____ <input type="checkbox"/> Engineering documents (specify) _____ <input type="checkbox"/> Other (specify) _____		
Supporting Documentation <input type="checkbox"/> Service Bulletins (specify) _____ <input type="checkbox"/> Training materials (specify) _____ <input type="checkbox"/> All-operator letters (specify) _____ <input type="checkbox"/> Inter-company bulletins (specify) _____ <input type="checkbox"/> Other (specify) _____		
<input type="checkbox"/> Other (specify) _____		
B. List recommendations for error prevention strategies.		
(Use additional pages, as necessary)		
Section VI – Summary of Contributing Factors, Error, and Event		
Provide a brief summary of the event.		

08/22/03

 TI 4100.25
 CHANGE: 07

AVIATION SYSTEM STANDARDS
 AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
 MAINTENANCE RELIABILITY PROGRAM MANUAL

MAINTENANCE ANALYSIS BULLETIN, VN FORM 4100-136

MAINTENANCE ANALYSIS BULLETIN			
SUBJECT			
TO:		DATE OF INITIAL MESSAGE	
		REPORT NO.	
		ORIGINATOR	TELEPHONE
APPROVED BY	ORGANIZATION	ROUTING SYMBOL	CONCURRENCES
PROBLEM:			
RECOMMENDATION:			
REPLY MESSAGE:			
FROM:		REPLY REQUESTED NLT	DATE OF REPLY
		SIGNATURE OF REPLIER	
		ORGANIZATION	ROUTING SYMBOL

VN Form 4100-136

(09/00)

Electronic Version

08/22/03

TI 4100.25
CHANGE: 07

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

NON ROUTINE WORK, VN FORM 4100-155

NON ROUTINE WORK

						SKILL	CSN	
ORIGINATED BY	ITEM:							
AUTHORIZED BY								
TECHNICIAN								
INSPECTOR								
P/N ON	CORRECTION:							
S/N ON								
S/N OFF								
NOMENCLATURE								
N-	INSP. NO.	DATE	CARD NO.	ITEM NO.	SEV. COD.	INSP. REQ.	WORK ORDER #	COST ACTG #

						SKILL	CSN	
ORIGINATED BY	ITEM:							
AUTHORIZED BY								
TECHNICIAN								
INSPECTOR								
P/N ON	CORRECTION:							
S/N ON								
S/N OFF								
NOMENCLATURE								
N-	INSP. NO.	DATE	CARD NO.	ITEM NO.	SEV. COD.	INSP. REQ.	WORK ORDER #	COST ACTG #

						SKILL	CSN	
ORIGINATED BY	ITEM:							
AUTHORIZED BY								
TECHNICIAN								
INSPECTOR								
P/N ON	CORRECTION:							
S/N ON								
S/N OFF								
NOMENCLATURE								
N-	INSP. NO.	DATE	CARD NO.	ITEM NO.	SEV. COD.	INSP. REQ.	WORK ORDER #	COST ACTG #

VN Form 4100-155

(01/01)

Electronic Version

08/22/03

 TI 4100.25
 CHANGE: 07

AVIATION SYSTEM STANDARDS
 AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
 MAINTENANCE RELIABILITY PROGRAM MANUAL

AERONAUTICAL RELIABILITY REPORT, VN FORM 4100-227

AERONAUTICAL RELIABILITY REPORT

INSTRUCTIONS. This form is to be completed within 24 hours of occurrence and forwarded by eMail to AVN-328 with CC copies to AVN-320 and AVN-324.

		1. ARR Date:
		2. ARR No.:
		3. PO No.:
4. Aircraft N-	5. Model:	6. S/N:

EQUIPMENT IDENTITY

7. System:	8. ATA:	9. Component:	
10. Part No.:	11. Serial No.:	12. TSO:	13. TT:
14. Origin of Part: Removed from Aircraft <input type="checkbox"/> Receive from Stock <input type="checkbox"/>			

RESULT

15. Delay <input type="checkbox"/>	16. Abort Flight <input type="checkbox"/>	17. In-flight Shutdown <input type="checkbox"/>	18. Emergency <input type="checkbox"/>
------------------------------------	---	---	--

PROBLEM DESCRIPTION

SUBMITTED BY:	19. Name:	20. Routing Symbol:
21. Text: (Condition, Cause, Findings)		
22. Comments/Recommendations:		

DISPOSITION (for AVN-328 use only)

23. Analyzed By:	24. Phone:	25. Date ARR Closed:
26. MAD Issued No.	27. MAB Issued No.	28. SDR Issued No.
29. Final Disposition/Comments		

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

MECHANICAL INTERRUPTION SUMMARY (EXAMPLE) (Page 1)



U.S. Department
of Transportation
**Federal Aviation
Administration**

Aviation System Standards

P.O. Box 25082
Oklahoma City, OK 73125

NOV - 5 2001

Mr. Wayne Cook
Principal Maintenance Inspector
Mr. Monte Davis
Principal Avionics Inspector
Flight Standards District Office,
SW 15
1300 South Meridian, Suite 601
Oklahoma City, OK 73108

Dear Mr. Cook and Mr. Davis:

Listed is the Flight Inspection Maintenance Division, AVN-300, aircraft mechanical interruption summary discrepancy for the month of October 2001. Discrepancies are listed by date, aircraft type, and tail number. AVN-300 had zero engine in-flight shutdown, and zero propeller in-flight featherings during this reporting period.

October 01, BAe 800A, N-98:	Altitude Heading Reference System (AHARS) failed in-flight
October 02, BAe 800A, N-95:	Ailerons stiff with gear up
October 09, Beech 300, N-66:	Left-hand power lever stiff
October 10, Beech 300, N-72:	Flight Inspection printer/plotter failed in-flight
October 16, BAe 800A, N-96:	Both engines surging at take off power
October 23, Beech 300, N-84:	Automatic Flight Inspection System (AFIS) database needed to be reloaded

COPY

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

MECHANICAL INTERRUPTION SUMMARY (EXAMPLE) (Page 2)

October 23, Beech 300, N-71: Flight Inspection
printer/plotter failed

Sincerely,

**ORIGINAL SIGNED BY
THOMAS D. PICKLE**

Thomas D. Pickle
Director of Maintenance

CC:
AVN-1/300/320/324/324LNeal

File: 4000-2
WP: C:\My Documents\Winword\MisReports\October2001.doc
AVN-324:LNeal:eg:45964:11/02/2001

COPY

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

FICO FORM 001 DISPATCH DEVIATION (EXAMPLE)

*-Denotes aircraft continued
out from previous day.

Page 1

** Out Date/Time is OKC local except for Intl.
FICO Form 001

N#	Acft Type	Base Loc	Out-Date /Time**	RTS-ETIC	RTS - ACT.	A/F Status	MSN Status	MX Delay or Canx	Discrepancies	Delay	Canx	FLEET STS	ALL
54	L60	OKC	10/23-08:50		10/23-09:00	UP	UP	No delay less than 15 min	Mic sw sticking			UP	25
84	B300	OKC	10/23-12:15		10/23-12:30	UP	UP	No delay less than 15 min	Data base needs reloaded (MIS)			OUT	2
71	B300	ATL	10/23-13:06		10/23-13:15	UP	UP	NO Delay less than 15 min. Issued MEL	Printer/Plotter failed. (MIS)			AOP	2
												SI	4
												TOTAL	33
Total										0	0		
The Status count is obtained from the following mornings status @ 06:00.													

08/22/03

TI 4100.25
CHANGE: 07

AVIATION SYSTEM STANDARDS AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION MAINTENANCE RELIABILITY PROGRAM MANUAL

FICO FORM 006 PROPOSED FLIGHT SCHEDULE (EXAMPLE)

Proposed Flight Schedule for
11/11/01-11/17/01

Revision #2

FLAO	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	NOTES	AVAILABLE AIRCRAFT this week	Remarks
A/C & # Series	80(2)		83(2)	83(2)	83(2)	80(2) mids	80(2) mids	N-40 Sun with N-43 as backup. N-80 start Thur night/ Fri morn. Will fly thru Sun 11/18.	83, 80 68	
A/C & # Series			75(2)	75(2)	75(2)	75(2)			75	
A/C & # Series									95	
A/C & # Series			67(2)	67(2)	67(2)				67, 79, 66	
A/C & # Series			79(2)	79(2)	79(2)				73, 71	
A/C & # Series				66(2)	66(2)	66(2)				
A/C & # Series			76(2)	76(2)	76(2)	76(2)			76 77	
A/C & # Series			77(2)	77(2)	77(2)	77(2)			55	
A/C & # Series			95(2)	95(2)	95(2)	95(2)		N-87 backup for Carib. N-87 differences training N-98 Europe	95, 96, 97 98, 99 85, 86, 87	
A/C & # Series		98(2)	98(2)	98(2)	87(2)	87(2)	87(2)			
A/C & # Series	**70(2)	**70(2)	81(2) 69(2)	81(2) 69(2)	81(2)	81(2)		N-69 Training **N-70 to return Sun or Mon.	70, 74, 84 81	
A/C & # Series			74(2)	74(2)	74(2)	54(2)			69, 78, 54	N-58 "Experimental" flights
A/C & # Series			54(2)	54(2)	54(2)	58(2)			58	
A/C & # Series			56(2)	56(2)	56(2)	56(2)			59	
A/C & # Series			59(2)	59(2)	59(2)	59(2)			56	
Total Aircraft & Series	2(4)	2(4)	12(24)	15(30)	14(28)	14(28)	2(4)			

MIDS-Midnight Flight
O/B- Out and Back

Any changes must be coordinated thru the FICO Maintenance Coordinators

*Denotes revised item.
FICO Form 006

TI 4100.25
CHANGE: 07

AVN SAFETY SIGNIFICANT EVENT, VN FORM 4040-11 (Page 1)

(See Reverse for Distribution)

VN Form 4040-11 (05/03) (FORMFLOW) (Supersedes VN Form 4040-11 (12/01))

AVIATION SYSTEM STANDARDS

AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION

MAINTENANCE RELIABILITY PROGRAM MANUAL

AVN SAFETY SIGNIFICANT EVENT, VN FORM 4040-11 (Page 2)

Events Defined

Aircraft Accident Definition

Associated with the operation of an aircraft that takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which either of the following occurs:

- Any person suffers death or serious injury.
- An aircraft receives substantial damage.

Aeronautical Hazards Definition

Potential causes for damage and injury:

- Events not defined in NTSB Part 830 that could result in damage to an aircraft if corrective action is not taken.
- Events that could cause an incident, accident, or ground accident if corrective action is not taken.
- Discoveries of special interest in one aircraft of a fleet type that could occur in other aircraft of that type.

Aeronautical Hazards Include but limited to:

- Servicing aircraft with improper fuel and other aviation fluids.

- Unscheduled in-flight engine shutdowns.
- In-flight damage from hail, bird strikes, or turbulence.
- Fires not incidental to flight.
- Ni-Cad battery over-temperature failures.

Aircraft Incident Definition

An event other than an accident, associated with the operation of an aircraft, which affects or could affect the safety of operations.

Aircraft Incidents Include but not limited to:

- In-flight fire.
- Rapid decompression requiring emergency action.
- Unwanted or asymmetrical thrust reversal.
- Inability of any required flight crewmember to perform normal flight duties as a result of injury or illness.
- Loss of life or serious injury that happens as a result of an event (while either in direct contact with aircraft or with anything attached thereto) during ground operations when engines are functioning without the intention of flight.
- Turbine-engine rotor failure, excluding compressor blades and turbine buckets.

- High-speed aborts.
- Conflicts or events that involve ATC.
- Aircraft collision in-flight with less-than-substantial damage and minor or no injuries.
- Hazardous materials incidents.
- Sabotage and aircraft hijacking.
- In-flight total electrical failures in multi-engine aircraft.

- Near mid-air collisions.
- Gear-up landings or any other collision with the ground or other object that results in less-than-substantial damage to the aircraft.
- Flight control system malfunction or failure.

Other Events

- Events that involve an aircraft resulting in damage to non-Government property that could result in a damage claim against Government.
- Events that could involve an aircraft that may generate unfavorable publicity.

NOTE: The National Transportation Safety Board requires the reporting of all accidents and some incidents immediately. (Reference NTSB Part 830.)

Submit completed form to the Flight Inspection Central Office (FICO), AVN-250. The FICO will notify the Director of Operations, AVN-200, and will send a copy to the Director of Safety and Quality Assurance, AVN-6.

DOT/FAA
FICO, AVN-250
P.O. Box 25082
Oklahoma City, OK 73125

AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL

***SERVICE DIFFICULTY REPORT, FAA FORM 8070-1 (Page 1)**



**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

**Service Difficulty Report
AERONAUTICAL EQUIPMENT**

FORM APPROVED
OMB No. 2120-0008

RIS: WS 8070-1	
Control No.	
ATA	CODE

MAJOR EQUIPMENT IDENTITY

Enter pertinent data	MANUFACTURER	MODEL/SERIES	SERIAL NUMBER	N-
AIRCRAFT			(D)	(C) N-
POWERPLANT			(F)	(E)
PROPELLER			(H)	(G)
				(I)

PROBLEM DESCRIPTION

DATE	STATUS	CARRIER	ATA	AIRCRAFT TYPE	N-	CONTROL NO.
<p>TEXT</p>						
SPECIFIC PART CAUSING PROBLEM						
PART NAME	MFG. PART NUMBER	PART CONDITION		PART/DEFECT LOCATION		
(J)	(K)	(L)		(M)		
COMPONENT/APPLANCE ABOVE PART INSTALLED ON					Report whole hours	PART TT
COMP/APPL NAME	MANUFACTURER	MFG. MODEL / NUMBER		(N)	(O)	
(P)	(Q)	(R)		SERIAL NO.		

SUBMITTED BY

SUBMITTER (Check one)										(S)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	EE	EF	EG	EH	EI	EJ	EK	EL	EM	EN	EO	EP	EQ	ER	ES	ET	EU	EV	EW	EX	EY	EZ	FA	FB	FC	FD	FE	FF	FG	FH	FI	FJ	FK	FL	FM	FN	FO	FP	FQ	FR	FS	FT	FU	FV	FW	FX	FY	FZ	GA	GB	GC	GD	GE	GF	GG	GH	GI	GJ	GK	GL	GM	GN	GO	GP	GQ	GR	GS	GT	GU	GV	GW	GX	GY	GZ	HA	HB	HC	HD	HE	HF	HG	HH	HI	HJ	HK	HL	HM	HN	HO	HP	HQ	HR	HS	HT	HU	HV	HW	HX	HY	HZ	IA	IB	IC	ID	IE	IF	IG	IH	II	IJ	IK	IL	IM	IN	IO	IP	IQ	IR	IS	IT	IU	IV	IW	IX	IY	IZ	JA	JB	JC	JD	JE	JF	JG	JH	JI	JJ	JK	JL	JM	JN	JO	JP	JQ	JR	JS	JT	JU	JV	JW	JX	JY	JZ	KA	KB	KC	KD	KE	KF	KG	KH	KI	KJ	KK	KL	KM	KN	KO	KP	KQ	KR	KS	KT	KU	KV	KW	KX	KY	KZ	LA	LB	LC	LD	LE	LF	LG	LH	LI	LJ	LK	LL	LM	LN	LO	LP	LQ	LR	LS	LT	LU	LV	LW	LX	LY	LZ	MA	MB	MC	MD	ME	MF	MG	MH	MI	MJ	MK	ML	MM	MN	MO	MP	MQ	MR	MS	MT	MU	MV	MW	MX	MY	MZ	NA	NB	NC	ND	NE	NF	NG	NH	NI	NJ	NK	NL	NM	NN	NO	NP	NQ	NR	NS	NT	NU	NV	NW	NX	NY	NZ	OA	OB	OC	OD	OE	OF	OG	OH	OI	OJ	OK	OL	OM	ON	OO	OP	OQ	OR	OS	OT	OU	OV	OW	OX	OY	OZ	PA	PB	PC	PD	PE	PF	PG	PH	PI	PJ	PK	PL	PM	PN	PO	PP	PQ	PR	PS	PT	PU	PV	PW	PX	PY	PZ	QA	QB	QC	QD	QE	QF	QG	QH	QI	QJ	QK	QL	QM	QN	QO	QP	QQ	QR	QS	QT	QU	QV	QW	QX	QY	QZ	RA	RB	RC	RD	RE	RF	RG	RH	RI	RJ	RK	RL	RM	RN	RO	RP	RQ	RR	RS	RT	RU	RV	RW	RX	RY	RZ	SA	SB	SC	SD	SE	SF	SG	SH	SI	SJ	SK	SL	SM	SN	SO	SP	SQ	SR	SS	ST	SU	SV	SW	SX	SY	SZ	TA	TB	TC	TD	TE	TF	TG	TH	TI	TJ	TK	TL	TM	TN	TO	TP	TQ	TR	TS	TU	TV	TW	TX	TY	TZ	UA	UB	UC	UD	UE	UF	UG	UH	UI	UJ	UK	UL	UM	UN	UO	UP	UQ	UR	US	UT	UU	UV	UW	UX	UY	UZ	VA	VB	VC	VD	VE	VF	VG	VH	VI	VJ	VK	VL	VM	VN	VO	VP	VQ	VR	VS	VT	VU	VV	VW	VX	VY	VZ	WA	WB	WC	WD	WE	WF	WG	WH	WI	WJ	WK	WL	WM	WN	WO	WP	WQ	WR	WS	WT	WU	WV	WW	WX	WY	WZ	XA	XB	XC	XD	XE	XF	XG	XH	XI	XJ	XK	XL	XM	XN	XO	XP	XQ	XR	XS	XT	XU	XV	XW	XX	XY	XZ	YA	YB	YC	YD	YE	YF	YG	YH	YI	YJ	YK	YL	YM	YN	YO	YP	YQ	YR	YS	YT	YU	YV	YW	YX	YY	YZ	ZA	ZB	ZC	ZD	ZE	ZF	ZG	ZH	ZI	ZJ	ZK	ZL	ZM	ZN	ZO	ZP	ZQ	ZR	ZS	ZT	ZU	ZV	ZW	ZX	ZY	ZZ
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ADDITIONAL COMMENTS

**AVIATION SYSTEM STANDARDS
AIRCRAFT MAINTENANCE AND ENGINEERING DIVISION
MAINTENANCE RELIABILITY PROGRAM MANUAL**

***SERVICE DIFFICULTY REPORT, FAA FORM 8070-1 (Page 2)**

All Submitters - Instructions for Completing FAA Form 8070-1

Major Equipment Identity

TITLE	ENTRY
Aircraft Powerplant Propeller	Identify major equipment related to problem. Enter manufacturer, model, and serial number per FAA/MANUFACTURER type certificate data sheet. If amateur built, use plan or kit name. Use military model designators when appropriate. Avoid colloquial names and market titles.
N-	Aircraft Registration Number.

Problem Description

Date	Give date problem occurred (i.e., 7-1-84).
Text	Whenever possible, describe conditions subsequent to, or leading up to, the reported problem: (a) Identify the cause for malfunction and emergency measures executed. (b) Include compliance or noncompliance with Airworthiness Directives, Service Bulletins, STC's, and PMA's. (c) Provide any significant fact you feel may help to reduce or eliminate recurrence (i.e., cycles, landings, and suggested changes).
Part Name	Skin, rib, shaft, venturi, transistor, capacitor, etc. Avoid colloquial names.
Mfg. Part Number	Alphanumeric part identifiers assigned by manufacturer.
Part Condition	Cracked, bent, burned, corroded, shorted, etc.
Part/Defect Location	L.H. alternator, audio, R.H. outboard, range switch, etc.
Part TT	Total service time on part in whole hours (i.e., 00531).
Part TSO	Service time on part since overhaul in whole hours (i.e., 00200).
Comp/Appl Name	Fuselage, wing, alternator, carburetor, VOR receiver, etc.
Manufacturer	Comp/appl manufacturer: Beech, Cessna, Prestolite, Bendix, Collins, etc.
Mfg. Model/Number, Serial Number	Alphanumeric model and serial numbers or identifiers assigned by comp/appl manufacturer (i.e., ALU8403, NAS3A1, 51RV1). Do not repeat "MAJOR EQUIPMENT IDENTITY" in these locations.

Submitted By

Submitter	As noted on form.
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FAA District Offices - Refer to FAA Order 8010.2